

Model	Mitsubishi Engine	Alternator	Rating	50 HZ ( 1500 rpm )		60 HZ ( 1800 rpm )	
				KVA	KW e	KVA	KW e
BMGS.2020LS P5	S16R - PTAA2	LSA51.2M60 / 4P	Continuous (C)	-	-	-	-
			Prime (P)	2.020	1.616	2275	1820
			Standby (S)	2.270	1.816	2525	2020

## GENERAL

### RATING DEFINITIONS

Ratings are based on SAE J1349 standard conditions. These rating also apply at ISO 3046/1, DIN 6271 and BS5514 standard conditions.

Ambient air temperature	40° C	Relative humidity	85%
Altitude	1500 m.ASL	Charge air coolant temp	50° C
Place of instalation	Indoor		

<b>Continuous</b>	Applicable for supplying power continuously. Continuous power in accordance with ISO.8528, ISO.15550, ISO.3046/1, JISB8002-1 and BS5514. Overload no allowed
<b>Prime</b>	Applicable for supplying power with varying load instead of the utility for unlimited time in lieu of commercially purchased power. 10% overload is for governing purpose only and shall not be used for the supply of electrical consumers in accordance with ISO 15550, ISO3046/1, JIS8002 -1, DIN6271 and BS5514.
<b>Stand-by</b>	Applicable for supplying emergency power at varying load in the event of normal utility power interruption. Fuel stop power in accordance with ISO.15550, ISO.3046/1, JISB8002-1, DIN6271 and BS5514. Overload no allowed

### SHOP TESTING

Generator set testing shall be carried out by the following items :

Starting Test	The testing was conducted to determine the starting time of the engine until is ready to load. Duration time for the starting test is 10 minutes
Protection Test	Protection test was performed to determine the machine before receiving the load. Protection test included engine and generator test
Load Test	Load test phases starting from 25%, 50%, 75%, 100% until 110% overload
Governor Test	Governor test should be done along with respective governor control. At 50% and 100% load is releases suddently

## DIESEL ENGINE DATA

### PARTICULAR

Engine Model	S16R - PTAA2
Type	4 Cycle, water cooled, Turbocharger with after cooler
No Of Cylinder	16 Cylinder
Arrangement	V Type
Bore X Stroke (mm)	170 X 180
Displacement Total (Liter)	65.37
Compression Ratio	13.5 : 1
Combustion System	Direct Injection
Lubricating Oil Class	CF Class SAE 40
Fuel Consumption	203 gr / kwh at 1500 rpm (Prime Rating)
(Allowance + 5%)	210 gr / kwh at 1800 rpm (Prime Rating)

## STANDARD ENGINE EQUIPMENT

### POWER LINE SYSTEM

Flywheel	SAE 21 Except Screw Size
Flywheel Housing	SAE 00 Except Screw Size
Engine Mounting	Rubber Type

### LUBRICATING SYSTEM

Oil Pump model	Gear Pump Type
Oil Pump Capacity	480 Liter/min at 1500 rpm
	580 Liter/min at 1800 rpm
Lube Oil Pressure	4.0 - 6.5 kg/cm2
Max Oil Temperature	110 deg C
Oil Quantity Total	230 Liter

#### AIR INTAKE SYSTEM

Air Cleaner	Paper Element Type Donalson FTG13L Qty 4 Ea
Turbocharge	Mitsubishi TD Type
Charge Air Cooler	Jacket water cooled
Intake Air Flow	4979 cfm 1500 rpm PRP 5791 cfm 1800 rpm PRP

#### EXHAUST SYSTEM

Exhaust Manifold	Air Cooled Type with heat insulator
Breather	Up side direction type ( For blow outside of engine room)
Back Pressure	600 mm H <sub>2</sub> O or 23.6 In H <sub>2</sub> O

#### CONTROL SYSTEM

Governor	Electronic speed Governor TOHO Speed Droop 0 - 5 % Adjustable
Actuator	DC 24V, 30A with voltage regulator
Magnetic Pick Up	2 Pole Conector

#### SAFETY DEVICE

Low Oil Pressure	1.5 kg/cm <sup>2</sup>
High Water Temp	98 deg C
Over Speed	10% from rated speed

### GENERATOR DATA

The alternator is designed to be suitable for typical generator set applications to backup power or continuous operation. The Alternator conform to the main international standards and regulations : IEC 60034, NEMA MG 1.22, CSA/UL on request, marine regulation and other. It can be integrated into a CE marked generator. The alternator is designed , manufactured and marketed in an ISO 9001 environment.

#### MAIN DATA

Generator Type	LSA 51.2 M60 / 4P	Nominal Current	3116 A
Power	2050 KVA/ 1640 Kwe	Speed	1500 rpm
Voltage	380 V	Ambient	40 deg C
Power Factor	0.8 Lagging	Altitude	1000 m (SLA)
Frequency	50 HZ	Rotation	CW Clockwise ( Seen when facing the D - End )
Winding Type	P 2/3	Bearing Type	Single Bearing
Insulation	Class H	Protection	IP 23
Temp Rise	Class H	Air Temp	40 deg C
Type Of Excitation	AREP + PMI	Ventilation (Internal)	Self Vent
AVR Type	R449 (Internal)		

### CONTROL PANEL

#### DGCP2002B STANDARD FEATURE

The DGCP 2002B is an Auto Start Control Module and DGCP 2002B1 is an Auto Main Failure Control Module (Option) suitable for a wide variety of single, diesel or gas, gen - set applications. A sophisticated module monitoring an extensive number of engine parameter, the DGCP 2002B will annunciate warning, shutdown and engine status information on the back lit LCD screen, illuminated LED, remote PC, audible alarm and via SMS text alert. The control system includes RS232, RS485 and Ethernet ports as well as dedicated terminals for system expansion.

The DGCP 2002B compatible with electronic (CAN) and non electronic (magnetic pick up or alternator sensing) engines and offer a comprehensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry paralleling requirements. The module can be easily configured using the DSE Configuration Suite Software. Selected front panel editing is also available.

Notice. The module DSE comply environmental testing standards : Electromagnetic compatibility BS EN 61000-6-2, Electrical safety BS EN 60950, Temperature BS EN 60068-2-1, Vibration BS EN 60068-2-1, Humidity BS EN 60068-2-30, Shock BS EN 60068-2-27, Degrees of protection provided by enclosure BS EN 60529

#### COOLING SYSTEM (Radiator Type)

Water Pump	Centrifugal Pump
Water Pump Capacity	1650 Liter/min at 1500 rpm 1850 Liter/min at 1800 rpm
Max Coolant Temp	98 deg C
Max Cooling Air Temp	40 deg C (TAA Type)
Coolant Capacity	560 Liter

#### FUEL SYSTEM

Injection Pump	Bosch Type PS.8
Max Section Head	75 mm Hg of feed Pump
Fuel Filter	Paper Element cartridge type

#### STARTING SYSTEM

Starting Motor	DC24V, 7.5 KW Qty 2 Ea
Alternator	DC24V, 30A With voltage regulator
Fuel Limit solenoid	Fuel limit at engine starting Energize to fuel control unit rated speed

#### ENGINE NOISE LEVEL

1 Meter Hight and Distance	109 Db (A)
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### KEY FEATURE AND BENEFIT

Configurable inputs (11) and output (8)
Voltage measurement
Main (utility) failure detection
Dedicated load test button
KW overload alarm
Comprehensive electrical protection
RS 232, RS485 and ethernet remote communications
Modbus RTU/TCP
PLC functionality
Multi event exercise timer
Automatic start and manual start
Even log (250)
Engine protection
Fault condition notification to a designated PC
Fuel usage monitor and low fuel alarm
Manual speed control (On compatible CAN engines)
Reverse power protection
Power monitoring (KWH, KVAR, KVAH, KVARH)
Load switching (load shedding and dummy load outputs)
Unbalanced load protection
Independent earth fault trip
Remote SCADA monitoring using module software
Advanced SMS messaging and start stop unit

### STANDARD FEATURE

DGCP 2002B Auto start model
Electronic Governor G2 Class - TOHO
Industrial Silencer BIS 355/14"
Exhaust Flexible BES 355/14" C/W Flange
Lead Acid Battery - 2 Ea X 12VDC, 2 Bank
Battery Cable and Rack
Flexible Fuel line ( Supply and return)
Water Level for Radiator
Exhaust Gas Temperature (Manual type)
Vibration Isolator (rubber mounting type)
Steel structure for common bad
Air cleaner with paper element type
Standard tool for operation
Operation and maintenance book
Part Catalog book
Factory Test Certificate

### SPECIFICATION

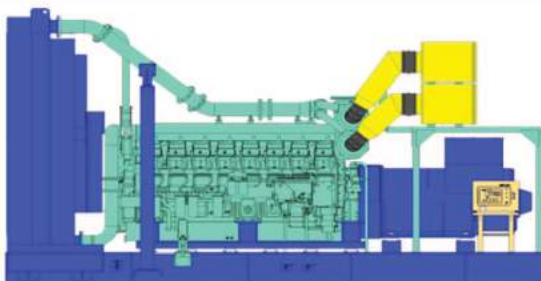
DC Supply	8 V to 35 V Continuous
Cranking Dropouts	Able to survive 0 V for 50 ms, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need
Operating current	260 Ma at 12V, 130 Ma at 24 V (max)
Standby current	120 Ma at 12V, 65 Ma at 24 V (max)
Charge Fail	
Excitation range	0 V to 35 V
Output fuel	15 A DC Supply voltage
Output start	15 A DC Supply voltage
Voltage Range	15 V to 333 V AC (L - N)
Frequency Range	3.5 Hz to 75 Hz
Storage Temp	-40 degC to +85 degC
Operating Temp	-30 degC to +70 degC

### OPTIONAL

DGCP 2002B1 for Auto Main Failure (AMF) and Automatic Load Transfer
DGCP 2003B for Automatic synchronizing
Electronic Governor G3 Class
CT Droop for LS generator
Residential Silencer BRS 355/14"
Critical Silencer BCS 355/14"
Fuel Separator (RACOR)
Remote Radiator (Horizontal Type)
Jacket Water Heater (standby unit)
Pre Lube Oil Pump (standby unit)
Space Heater (standby unit)
Lube Oil Heater (standby unit)
Auxilliary Control Panel
Vibration Isolator Spring type
Communication Tool

Note. For additional items can follow customer demand

### DIMENSION AND WEIGHT



OVERALL DIMENSION (mm)	
Length	5500
Width	2400
High	3477
WEIGHT (kg)	
Dry Weight	16000
Wet Weight	16649

### PT. GENINDO BERKAT UTAMA

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