

450 KVA DIESEL GENERATOR

FEATURES & BENEFITS

- Maximum 500 kVA, 380V, 1500 RPM
- Constant voltage AVR (Automatic Voltage Regulator)
- 24 Volt Electric Starter
- 950 Litre Fuel Tank, 15 Hours @ 75% load
- Silent Version (± 78 dBA)
- 6 cylinder, vertical, water cooled Diesel Engine
- Three Phase Output
- DeepSea DSE6120 Digital Control Panel
- Low oil pressure system
- Low water cut out engine protection



GENERAL DATA	
Model:	BPD450S3-B
Prime Power (P.R.P):	450 kVA
Stand-by Power (L.T.P):	500 kVA
Amps:	759 A
Power Factor / COS:	0.8
Frequency:	50 Hz
Voltage:	380 V
Phases:	Three Phase
Engine Speed:	1500 RPM
Length:	4150 mm
Width:	1500 mm
Height:	2200 mm
Weight:	4650 kg's
Tank Capacity:	950 l

ADDITIONAL	
Running Time:	15 Hours @ 75% load
Structure Type:	Silent
Noise Level (7m):	78 dBA
Auto Voltage Regulator:	Constant voltage AVR
ISO9001 Certified:	Yes
CE Certified:	Yes
Fuel Cons. @ 100% Load:	84.4
Fuel Cons. @ 75% Load:	63.3
Fuel Cons. @ 50% Load:	42.2

ENGINE DATA	
Brand:	Baudouin
Model:	6M21G500/5
Type:	6 cylinder, vertical, water cooled Diesel Engine
Starting System:	24 Volt Electric Starter
Auto-Decompression:	Yes
Cubic Capacity (l):	12.54
Compression Ratio:	16:1
Rated Power (kW/RPM):	450 / 1500
Fuel Type:	Diesel
Lube Oil:	15W40
Low Pressure Alert:	Yes
Low Fuel Cut Out:	Yes

CONTROL PANEL	
Model:	DeepSea DSE6120
Type:	Digital Control Panel
Analogue Inputs:	2
Mains Phase Voltage:	Yes
Mains Line Voltage:	Yes


ALTERNATOR	
Model:	DPC354C
Pole Number:	4
Excitation Mode:	Self Excitation

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	Model : 6M21G500/5	Date : 21/09/18
	PowerKit Engine Datasheet	Page : 1 / 4


Ratings

RPM	Gross Engine Output		
	COP kWm	PRP kWm	ESP kWm
1500	N/A	409 *	450

Basic data

Engine model.....	6M21G500/5
N° of Cylinders / Valves	6 / 24
Cylinders arrangement.....	In line
Bore x Stroke (mm).....	127 x 165
Displacement (L).....	12.54
Thermodynamic Cycle	Diesel 4 stroke
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System.....	High Pressure Common Rail
Aspiration.....	Turbocharged and Aftercooled
Compression ratio.....	16 : 1
Flywheel housing	SAE 1
Flywheel	14"
N° of teeth on flywheel ring gear	136
Inertia of flywheel (kg/m ²).....	2.32
Inertia of crankshaft (kg/m ²)	0.574
Emission standard	N/A
Overall Dimensions with radiator (Length x Width x Height) (mm)	2141 x 1133 x 1358
Engine dry weight (kg)	1260
Engine wet weight (includes oil, coolant) (kg).....	1345

* The indicated PRP Power is for reference only. This engine is designed for emergency standby power (ESP) applications only.

	Model : 6M21G500/5	Date : 21/09/18
	PowerKit Engine Datasheet	Page : 2 / 4

Air intake system

Air intake temperature rise (°C).....	≤ 15
Air intake restriction clean filter (mBar).....	≤ 35
Air intake restriction dirty filter (mBar)	≤ 70
Recommended air flow @ PRP (m ³ /min).....	N/A
Recommended air flow @ ESP (m ³ /min).....	28.7
Min. diameter of intake pipe (mm).....	100

Intercooling system


Intercooler heat dissipating capacity @ PRP (kJ/s)	N/A
Intercooler heat dissipating capacity @ ESP (kJ/s)	92.5
Max. intake temperature @ 25°C ambient temperature (°C)	55
Max. difference between intake temperature and ambient temperature (°C).....	≤ 30
Max. intake pressure drop of intercooler (mBar).....	120

Cooling system

System designed for ambient temperature up to (°C)	50
Min. inside diameter of coolant outlet pipe (mm)	75
Coolant capacity of radiator and pipes (L)	30
Coolant alarm (shutdown) temperature (°C).....	105
Thermostat opening temperature / full open temperature (°C).....	76 / 88
Min. pressure in cooling system (Bar)	0.5
Coolant capacity of the engine (L).....	25

Exhaust system

Max. exhaust back pressure (mBar)	120
Max. exhaust temperature before turbocharger (°C)	≤ 740
Max. exhaust temperature after turbocharger (°C)	≤ 580
Exhaust flow @ PRP (m ³ /min)	N/A
Exhaust flow @ ESP (m ³ /min).....	99
Min. diameter of exhaust pipe (mm).....	100
Max. bending moment of exhaust gas exit flange (Nm).....	19

	Model : 6M21G500/5	Date : 21/09/18
	PowerKit Engine Datasheet	Page : 3 / 4

Lubrication system

Oil capacity Low / High (L)	27 / 30
Oil pressure in normal condition idle speed (Bar)	1.3 - 2.5
Oil pressure in normal condition at 1500 Rpm (Bar)	3.5 - 5.5
Lowest oil pressure alarm (shutdown) (Bar)	1
Max. oil temperature (°C)	105
Oil flow (L/min).....	≥ 180
Oil fuel consumption ratio based on engine fuel consumption data.....	≤ 0.2 %
Total system capacity (including filters) (L).....	32

Noise


Diesel engine noise (Acoustic power level) (dB(A))	111.7
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Fuel system

Governor	ECU
Max. restriction at fuel pump inlet (Bar)	0.5
Max. fuel return restriction (Bar)	0.5
Max. fuel inlet temperature (°C)	70
Fuel supply flow (L/hr).....	400
Min. pressure of fuel pump (Bar).....	1.3
Min. diameter of inlet pipe (mm).....	14
Min. diameter of return pipe (mm)	14

Electrical system

Electrical system voltage (negative to ground) (Vdc).....	24
Starter power (kW).....	5.4
Battery charger current (A).....	70
Max. electric resistance of starting circuit (Ω).....	0.02
Min. sectional area of wire (mm ²)	70
Min. cold start temperature without auxiliary starting device (°C)	- 10
Min. cold start temperature with auxiliary starting device (°C)	- 30

	Model : 6M21G500/5	Date : 21/09/18
	PowerKit Engine Datasheet	Page : 4 / 4

Heat balance test data (with ambient temperature 28 °C)

Total heat dissipation @ ESP (kJ/s).....649.6

Performance data

Mean Piston Speed (m/s).....8.26

BMEP (Bar)28.71

Fan absorbed power (kW)..... 21

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	205.5	110.2
100% PRP	N/A	N/A
75% PRP	N/A	N/A
50% PRP	N/A	N/A
25% PRP	N/A	N/A
Fuel consumption tolerance + 3 %		

Ratings definitions

Emergency Standby Power (ESP)

Emergency Standby Power is the maximum power available for a varying load for the duration of a main power network failure. The average load factor over 24 hours of operation should not exceed 70% of the engine’s ESP power rating. Typical operational hours of the engine is 200 hours per year, with a maximum usage of 500 hours per year. This includes an annual maximum of 25 hours per year at the ESP power rating. No overload capability is allowed. The engine is not to be used for sustained utility paralleling applications.

Prime Power (PRP)

Prime Power is the maximum power available for unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine’s PRP power rating during any 24 hour period. An overload capability of 10% is available, however, this is limited to 1 hour within every 12 hour period.

Continuous Power (COP)

Continuous Power is the maximum power available for an unlimited period of use at a constant load factor. No overload capability is allowed.

- 1) All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of ±5%.
- 2) Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
- 3) Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

DSE6110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

DSE6110 MKII

DSE6120 MKII

KEY FEATURES

- Large back-lit text display
- Multiple display languages
- Heated display option available
- DSENet® expansion compatible
- Data logging facility
- Fully configurable via PC using USB communication
- Front panel configuration
- Efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE6120 MKII only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Generator/load current monitoring and protection
- Generator overload protection (kW)
- Breaker control via fascia buttons
- Fuel and start outputs, configurable when using CAN
- 4 configurable DC outputs
- 4 configurable analogue/digital inputs
- Support for 0 to 10 V &

- 4 to 20 mA oil pressure sensors
- 6 configurable digital inputs
- Configurable staged loading outputs
- CAN, MPU and alternator speed sensing in one variant
- 3 engine maintenance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel pump control
- Real time clock
- Battery voltage monitoring
- Start on low battery voltage
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD and LED alarm indication
- Customisable information screens
- Configurable event log (100)
- Tier 4 ECO engine support including exhaust fluids & filters

- J1939-75 instrumentation output, configurable CAN instrumentation and alarms
- Start on low battery
- Enhanced alarm functionality
- Low load alarm

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6120 MKII only)
- Increased input and output expansion capability via DSENet®
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously which are clearly displayed on a large back-lit text display via multiple languages
- The module can be configured to suit a wide range of applications
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

SPECIFICATIONS
DC SUPPLY

CONTINUOUS VOLTAGE RATING
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 for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

100 mA at 12 V, 105 mA at 24 V

MAXIMUM STANDBY CURRENT

60 mA at 12 V, 55 mA at 24 V

MAXIMUM SLEEP CURRENT

40 mA at 12 V, 35 mA at 24 V

GENERATOR & MAINS (UTILITY)

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE

3.5 Hz to 75 Hz

INPUTS

DIGITAL INPUTS A to F
Negative switching

ANALOGUE INPUT A

Configurable as:
Negative switching digital input
0 V to 10 V
4 mA to 20 mA
0 Ω to 240 Ω

ANALOGUE INPUTS B TO D

Configurable as:
Negative switching digital input
0 Ω to 480 Ω

OUTPUTS
OUTPUT A (FUEL)

10 A short term, 5 A continuous, at supply voltage

OUTPUT B (START)

10 A short term, 5 A continuous, at supply voltage

AUXILIARY OUTPUTS C, D, E & F

2 A DC at supply voltage

DIMENSIONS

OVERALL
216 mm x 158 mm x 43 mm
8.5" x 6.2" x 1.5"

PANEL CUT-OUT

184 mm x 137 mm
7.2" x 5.3"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

STORAGE TEMPERATURE RANGE

-40 °C to +85 °C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE

NON HEATED DISPLAY VARIANT
-30 °C to +70 °C
-22 °F to +158 °F

HEATED DISPLAY VARIANT

-40 °C to +70 °C
-40 °F to +158 °F

RELATED MATERIALS
TITLE

DSE6110/20 MKII Installation Instructions
DSE6110/20 MKII Operator Manual
DSE6110/20 MKII Configuration Suite PC Manual

PART NO.

053-173
057-226
057-224

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-521

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DSE6110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

The DSE6110 MKII Auto Start Control Module and the DSE6120 MKII Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules give comprehensive engine and alternator protection. This is indicated on a large back-lit LCD text display via an array of warning, electrical trip and shutdown alarms in multiple languages.

Electronic J1939 (CAN) and non-electronic MPU and alternator sensing engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications.

Through USB Communication both modules can be configured using the DSE Configuration Suite PC Software or through the module's front panel editor.

Using the DSE Configuration Suite PC Software the controller is easy to use and configure which allows alteration of operating parameters, sequences, timers and alarms.

AVAILABLE VARIANTS

- 6110-03 Auto Start with real time clock
- 6120-03 Auto Mains Failure with real time clock

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
 BS EN 61000-6-2
 EMC Generic Immunity Standard for the Industrial Environment
 BS EN 61000-6-4
 EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
 BS EN 60950
 Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
 BS EN 60068-2-1
 Ab/Ae Cold Test -30 °C
 BS EN 60068-2-2
 Bb/Be Dry Heat +70 °C

VIBRATION
 BS EN 60068-2-6
 Ten sweeps in each of three major axes
 5 Hz to 8 Hz at +/-7.5 mm, 8 Hz to 500 Hz at 2 GN

HUMIDITY
 BS EN 60068-2-30
 Db Damp Heat Cyclic 20/55 °C at 95% RH 48 Hours
 BS EN 60068-2-78
 Cab Damp Heat Static 40 °C at 93% RH 48 Hours

SHOCK
 BS EN 60068-2-27
 Three shocks in each of three major axes
 15 GN in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
 BS EN 60529
 IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS

