

## 320 KVA DIESEL GENERATOR

### FEATURES & BENEFITS

- Maximum 350 kVA, 380V, 1500 RPM
- Constant voltage AVR (Automatic Voltage Regulator)
- 24 Volt Electric Starter
- 500 Litre Fuel Tank, 10 Hours @ 75% load
- Silent Version ( $\pm 78$  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



MOTEURS **Baudouin** DSE **DEEP SEA ELECTRONICS**

GENERAL DATA	
<b>Model:</b>	BPD320S3-B
<b>Prime Power (P.R.P):</b>	320 kVA
<b>Stand-by Power (L.T.P):</b>	350 kVA
<b>Amps:</b>	531 A
<b>Power Factor / COS:</b>	0.8
<b>Frequency:</b>	50 Hz
<b>Voltage:</b>	380 V
<b>Phases:</b>	Three Phase
<b>Engine Speed:</b>	1500 RPM
<b>Length:</b>	3950 mm
<b>Width:</b>	1250 mm
<b>Height:</b>	2150 mm
<b>Weight:</b>	3319 kg's
<b>Tank Capacity:</b>	500 l

ADDITIONAL	
<b>Running Time:</b>	10 Hours @ 75% load
<b>Structure Type:</b>	Silent
<b>Noise Level (7m):</b>	78 dBA
<b>Auto Voltage Regulator:</b>	Constant voltage AVR
<b>ISO9001 Certified:</b>	Yes
<b>CE Certified:</b>	Yes
<b>Fuel Cons. @ 100% Load:</b>	62.1
<b>Fuel Cons. @ 75% Load:</b>	46.6
<b>Fuel Cons. @ 50% Load:</b>	31.1

ENGINE DATA	
<b>Brand:</b>	Baudouin
<b>Model:</b>	6M16G350/5
<b>Type:</b>	6 cylinder, vertical, water cooled Diesel Engine
<b>Starting System:</b>	24 Volt Electric Starter
<b>Auto-Decompression:</b>	Yes
<b>Cubic Capacity (l):</b>	9.726
<b>Compression Ratio:</b>	17:1
<b>Rated Power (kW/RPM):</b>	291 / 1500
<b>Fuel Type:</b>	Diesel
<b>Lube Oil:</b>	15W40
<b>Low Pressure Alert:</b>	Yes
<b>Low Fuel Cut Out:</b>	Yes

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


ALTERNATOR	
<b>Model:</b>	DPC314E
<b>Pole Number:</b>	4
<b>Excitation Mode:</b>	Self Excitation

**Johannesburg**  
011 397 7373

**Pietermaritzburg**  
033 007 0812

**Nelspruit**  
013 007 1753

**Bloemfontein**  
051 001 1429

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## Ratings

RPM	Gross Engine Output	
	PRP kWm	ESP kWm
1500	291 *	320

## Basic data

Engine model	6M16G350/5
N° of Cylinders / Valves	6 / 24
Cylinders arrangement	In line
Bore x Stroke (mm)	126 x 130
Displacement (L)	9.726
Thermodynamic Cycle	Diesel 4 stroke
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	Mechanical Pump
Aspiration	Turbocharged and Aftercooled
Compression ratio	17 : 1
Flywheel housing	SAE 1
Flywheel	14"
N° of teeth on flywheel ring gear	136
Inertia of flywheel (kg/m <sup>2</sup> )	1.84
Inertia of crankshaft (kg/m <sup>2</sup> )	0.39
Emission standard	N/A
Overall Dimensions with radiator (Length x Width x Height) (mm)	2062 x 1100 x 1300
Engine dry weight without radiator and without radiator pipes (kg)	880
Engine dry weight with radiator and radiator pipes (kg)	1070
Engine wet weight with radiator (includes oil, coolant) (kg)	1150

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

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## 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 (m³/min) .....	N/A
Recommended air flow @ ESP (m³/min) .....	20.8
Min. diameter of intake pipe (mm) .....	100

## Aftercooling system


Aftercooler system type .....	Air to Air
Aftercooler heat dissipating capacity @ PRP (kJ/s) .....	N/A
Aftercooler heat dissipating capacity @ ESP (kJ/s) .....	73.4
Max. intake temperature @ 25°C ambient temperature (°C) .....	55
Max. difference between intake temperature and ambient temperature (°C) .....	≤ 30
Max. intake pressure drop of aftercooler (mBar) .....	120

## Cooling system with standard radiator

System designed for ambient temperature up to (°C) .....	50
Radiator type .....	Mechanical
Fan type .....	Belt driven pusher
Min. inside diameter of coolant outlet pipe (mm) .....	45
Coolant capacity of radiator and pipes (L) .....	28
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) .....	22
Cooling fan airflow (m³/min) .....	450
Max additional restriction - Duct allowance (Pa) .....	150

## Exhaust system

Max. exhaust back pressure (mBar) .....	110
Max. exhaust temperature before turbocharger (°C) .....	≤ 720
Max. exhaust temperature after turbocharger (°C) .....	≤ 550
Exhaust flow @ PRP (m³/min) .....	N/A
Exhaust flow @ ESP (m³/min) .....	58.2
Min. diameter of exhaust pipe (mm) .....	100
Max. bending moment of exhaust gas exit flange (Nm) .....	10

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## Lubrication system

Oil capacity Low / High (L) .....	22 / 26
Oil pressure in normal condition idle speed (Bar) .....	1.3 - 2.8
Oil pressure in normal condition at 1500 Rpm @ PRP (Bar) .....	3.5 - 5.8
Lowest oil pressure alarm (shutdown) (Bar) .....	1
Max. oil temperature (°C) .....	105
Oil flow (L/min) .....	136
Oil fuel consumption ratio based on engine fuel consumption data .....	≤ 0.2 %
Total system capacity (including filters) (L) .....	30

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

Total heat dissipation @ ESP (kJ/s) .....	481.8
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## Fuel system

Governor .....	Electronic
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) .....	169
Min. pressure of fuel pump (Bar) .....	1.3
Min. diameter of inlet pipe (mm) .....	12
Min. diameter of return pipe (mm) .....	12

## Electrical system

Electrical system voltage (negative to ground) (Vdc) .....	24
Starter power (kW) .....	8.5
Battery charger current (A) .....	70
Battery charger absorbed power (kW) .....	2
Max. electric resistance of starting circuit (Ω) .....	0.0108
Min. sectional area of wire (mm <sup>2</sup> ) .....	70
Min. cold start temperature without auxiliary starting device (°C) <sup>1</sup> .....	- 10
Min. cold start temperature with auxiliary starting device (°C) <sup>1</sup> .....	- 30

<sup>1</sup> Engines used in emergency standby application or application that require immediate start under load, must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

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### Performance data

Mean Piston Speed (m/s)	.....	6.5
BMEP (Bar)	.....	26.32
Fan absorbed power (kW)	.....	13.4

### Noise

Diesel engine noise (Acoustic power level) (dB(A))	.....	110.8
Noise - upper side (dB(A))	.....	95.8
Noise - right side (view from flywheel) (dB(A))	.....	96.4
Noise - left side (view from flywheel) (dB(A))	.....	95.9
Noise – front (radiator) side (dB(A))	.....	96
Noise – rear (flywheel) side (dB(A))	.....	95.3

#### Notes :

- Noise test made at 100% of the ESP power, 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- Noise test refers to GB/T 1859 norm : Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method

### Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	205.8	78.4
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.

- All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of  $\pm 5\%$ .
- 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.
- 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

**OPTIONAL PARTS**

PART	PART NUMBER
IP65 Gasket	020-521

**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

**DEEP SEA ELECTRONICS PLC UK**

Highfield House, Hunmanby Industrial Estate, Hunmanby YO14 0PH  
**TELEPHONE** +44 (0) 1723 890099 **FACSIMILE** +44 (0) 1723 893303  
**EMAIL** sales@deepseapl.com **WEBSITE** www.deepseapl.com

**DEEP SEA ELECTRONICS INC USA**

3230 Williams Avenue, Rockford, IL 61101-2668 USA  
**TELEPHONE** +1 (815) 316 8706 **FACSIMILE** +1 (815) 316 8708  
**EMAIL** sales@deepseausa.com **WEBSITE** www.deepseausa.com

