Generator	Generator Model	Engine Make	Engine Model	Alternator	Controller
Baudouin	EB 45	Baudouin	**4M06G50/5**	Suitable for Baudouin Genset	Deep Sea 4520

Prime Power KVA/KW	Standby Power KVA/KW	Fuel Consumption @ 70% L/H	Fuel Tank/Min	Oil Capacity/ Min	Dimensions
45/36	50/40	8.2	120 L	10 L	81” x 29” x 51”

Standby: Standby power standby duty, operation under variable load, without overload.

Prime Power: Prime Power Continuous duty operation, under variable load, 10% overloads permissible 1/12hr.

FEATURES

- Rugged Engine
- Control System
- Advanve digital control system
- Anti vibrating isolators
- 18 Months warranty
- low fuel consumption
- Heavy duty febricated steel base frame

BENIFITS

- Safe; Eco Friendly
- Long Service, Life Economical
- Smart; occupies little space
- Practical design; Easy to operate
- People oriented, Safety foremost
- High standard quality guaranteed

Ratings

RPM	Gross Engine Output		
	COP kWm	PRP kWm	ESP kWm
1500	35.2	44	48

Basic data

Engine model 4M06G50/5
N° of Cylinders / Valves ..... 4 / 8
Cylinders arrangement ..... In line
Bore x Stroke (mm) ..... 89 × 92
Displacement (L) 2.3
Thermodynamic Cycle ..... Diesel 4 stroke
Cooling System ..... Liquid (water + 50% antifreeze)
Injection System ..... Direct
Fuel System ..... Mechanical Pump
Aspiration ..... Turbocharged and Aftercooled
Compression ratio ..... 17.5 : 1
Flywheel housing ..... SAE 3
Flywheel ..... 11.5"
N° of teeth on flywheel ring gear 128
Inertia of flywheel (kg/m²) 0.47
Inertia of crankshaft (kg/m²) 0.039
Emission standard ..... N/A
Overall Dimensions with radiator (Length x Width x Height) (mm) ..... 1180 × 654 × 785
Engine dry weight (kg) 285
Engine wet weight (includes oil, coolant) (kg) 310

Air intake system

Air intake temperature rise (°C) ..... ≤ 5
Air intake restriction clean filter (mBar) ..... ≤ 35
Air intake restriction dirty filter (mBar) ..... ≤ 60
Recommended air flow @ PRP (m³/min) 2.6
Recommended air flow @ ESP (m³/min) 2.7
Min. diameter of intake pipe (mm) 50

Intercooling system

Intercooler heat dissipating capacity @ PRP (kJ/s) 4.3
Intercooler heat dissipating capacity @ ESP (kJ/s) 5.1
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) 80

Cooling system

System designed for ambient temperature up to (°C) 50
Min. inside diameter of coolant outlet pipe (mm) 32
Coolant capacity of radiator and pipes (L) 7.9
Coolant alarm (shutdown) temperature (°C) 105
Thermostat opening temperature / full open temperature (°C) ..... 72 / 82
Min. pressure in cooling system (Bar) 0.15
Coolant capacity of the engine (L) 5

Exhaust system

Max. exhaust back pressure (mBar) 80
Max. exhaust temperature before turbocharger (°C) ..... ≤ 700
Max. exhaust temperature after turbocharger (°C) ..... ≤ 650
Exhaust flow @ PRP (m³/min) 8.82
Exhaust flow @ ESP (m³/min) 9.42
Min. diameter of exhaust pipe (mm) 50
Max. bending moment of exhaust gas exit flange (Nm) 10

Lubrication system

Oil capacity Low / High (L) ..... 7.1 / 9.5
Oil pressure in normal condition idle speed (Bar) ..... ≥ 1
Oil pressure in normal condition at 1500 Rpm (Bar) ..... 2 - 5
Lowest oil pressure alarm (shutdown) (Bar) 1
Max. oil temperature (°C) 115
Oil flow (L/min) 22
Oil fuel consumption ratio based on engine fuel consumption data ..... ≤ 0.4 %
Total system capacity (including filters) (L) 11.5

Noise

Diesel engine noise (Acoustic power level) (dB(A)) 105.5

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) 45
Min. pressure of fuel pump (Bar) 1.3
Min. diameter of inlet pipe (mm) 10
Min. diameter of return pipe (mm) 10

Electrical system

Electrical system voltage (negative to ground) (Vdc) 12
Starter power (kW) 3.7
Battery charger current (A) 55
Max. electric resistance of starting circuit (Ω) 0.004
Min. sectional area of wire (mm²) 50
Min. cold start temperature without auxiliary starting device (°C) ..... - 5
Min. cold start temperature with auxiliary starting device (°C) ..... - 15

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

Total heat dissipation @ ESP (kJ/s) 65.7

Performance data

Mean Piston Speed (m/s) 4.6

BMEP (Bar) 16.70

Fan absorbed power (kW) 1

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	205	11.8
100% PRP	204.3	10.7
75% PRP	203.3	7.8
50% PRP	206.6	5.4
25% PRP	249.4	3.3
	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.

ALTERNATOR TECHNICAL DATA

Insulation System	Class H
Winding Pitch	2/3 to Minimize Harmonics effects
Number of Poles	4
Number of Bearings	Single Bearing
RPM	1500 RPM
Power Factor	0.8/1
Regulation	± 1%
Frequency	50 Hz
Voltage Range	380-415 / 220-240
IP Rating (Protection)	Ip23

DSEGenset

DSE

DSE4510/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

FEATURES

The DSE4510 Auto Start Control Module and the DSE4520 Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Whilst maintaining functions included within higher end controllers, such as generator or load power monitoring, the DSE45xx range of especially compact controllers provide the user with the ultimate size to feature ratio.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules will give comprehensive engine and alternator protection. This will be indicated on the largest back-lit LCD icon display in its class via an array of warning, electrical trip and shutdown alarms.

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

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

All DSE products are supported by the DSE global technical support team which gives our customers and end users access to 24 hour system help and advice.

*AVAILABLE VARIANTS

4510-03	Auto start with real time clock
4510-04	Auto start with real time clock & heated display
4520-03	Auto Mains Failure with real time clock
4520-04	Auto Mains Failure with real time clock & heated display

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

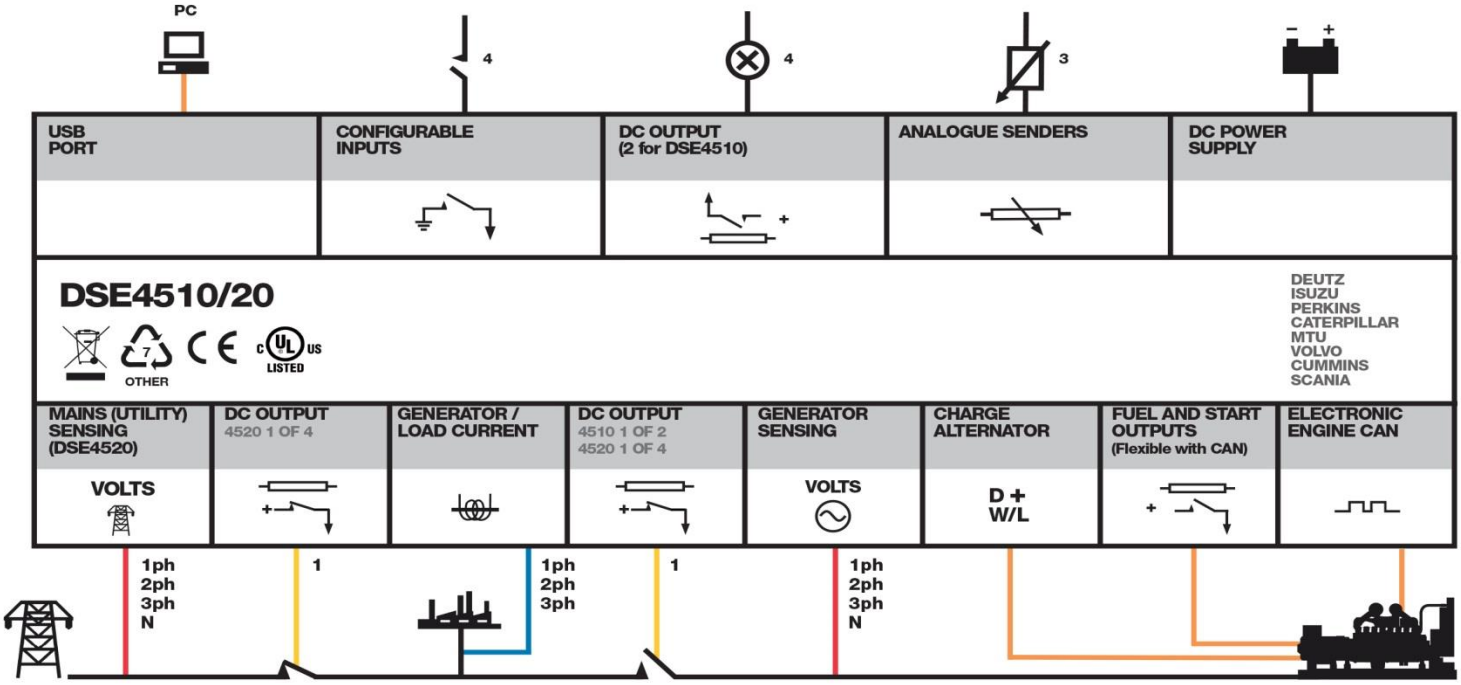
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 GN

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



ISSUE 1

DSEGenset

DSE

DSE4510/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

FEATURES

DSE**4520**

DSE**4510**

KEY BENEFITS

- Ultimate size to feature ratio
- Automatically transfers between mains (utility) and generator (DSE4520 only)
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously
- The module can be configured to suit a wide range of applications
- Compatible with a wide range of CAN engines, including tier 4 engine support
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

KEY FEATURES

- Largest back-lit icon display in its class
- Heated display option
- Real time clock provides accurate event logging
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE4520 only)
- Compatible with 600 V ph - ph nominal systems
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Fuel and start outputs (configurable when using CAN)
- 4 configurable DC outputs (2 for DSE4510)
- 3 configurable analogue/digital inputs
- 4 configurable digital inputs
- Configurable staged loading outputs
- CAN and alternator speed sensing in one variant
- 3 engine maintainance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- 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 alarm indication
- Event log (50)

SPECIFICATION

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
85 mA at 12 V, 96 mA at 24 V

MAXIMUM STANDBY CURRENT
51 mA at 12 V, 47 mA at 24 V

MAXIMUM SLEEP CURRENT
35 mA at 12 V, 32 mA at 24 V

MAXIMUM DEEP SLEEP CURRENT
<10 uA at 12 V, <10 uA at 24 V

MAINS (UTILITY) DSE4520 ONLY
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

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
2 A DC at supply voltage

AUXILIARY OUTPUTS E & F DSE4520
2 A DC at supply voltage

GENERATOR
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

DIMENSIONS
OVERALL
140 mm x 113 mm x 43 mm
5.5" x 4.4" x 1.7"

PANEL CUT-OUT
118 mm x 92 mm
4.6" x 3.6"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40°C to +85°C

OPERATING TEMPERATURE RANGE
-30°C to +70°C
-40°C to +70°C (for heated display variant)

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-282

RELATED MATERIALS

TITLE	PART NO'S
DSE4510/20 Installation Instructions	053-157
DSE4510/20 Operator Manual	057-171
DSE4510/20 Configuration Suite PC Manual	057-172

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