

## 400 KVA DIESEL GENERATOR

### FEATURES & BENEFITS

- Maximum 440 kVA, 380V, 1500 RPM
- Constant voltage AVR (Automatic Voltage Regulator)
- 24V Electric Starter
- 600 Litre Fuel Tank, 9 Hours @ 75% load
- Silent Version ( $\pm 72$  dBA)
- 6 Cylinder, in-line, Water cooled, Turbocharged & Aftercooled
- Three Phase Output
- DeepSea DSE6120 Digital Control Panel
- Low oil pressure system
- Low water cut out engine protection



Perkins LEROY-SOMER DEEP SEA DSE ELECTRONICS

GENERAL DATA	
<b>Model:</b>	BPD400S3-P
<b>Prime Power (P.R.P):</b>	400 kVA
<b>Stand-by Power (L.T.P):</b>	440 kVA
<b>Amps:</b>	668 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>	4150 mm
<b>Width:</b>	1450 mm
<b>Height:</b>	2350 mm
<b>Weight:</b>	4200 kg's
<b>Tank Capacity:</b>	600 l

ADDITIONAL	
<b>Running Time:</b>	9 Hours @ 75% load
<b>Structure Type:</b>	Silent
<b>Noise Level (7m):</b>	72 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>	84.0
<b>Fuel Cons. @ 75% Load:</b>	63.0
<b>Fuel Cons. @ 50% Load:</b>	42.0

ENGINE DATA	
<b>Brand:</b>	Perkins
<b>Model:</b>	2206C-E13TAG3
<b>Type:</b>	6 Cylinder, in-line, Water cooled, Turbocharged & Aftercooled
<b>Starting System:</b>	24V Electric Starter
<b>Auto-Decompression:</b>	Yes
<b>Cubic Capacity (l):</b>	12.5
<b>Compression Ratio:</b>	16.3:1
<b>Rated Power (kW/RPM):</b>	412 / 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>	6
<b>Mains Phase Voltage:</b>	Yes
<b>Mains Line Voltage:</b>	Yes

ALTERNATOR	
<b>Model:</b>	Leroy Somer - TAL-A47-B
<b>Pole Number:</b>	4
<b>Excitation Mode:</b>	Self Excitation

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Bloemfontein  
051 001 1429

# 2000 Series 2206C-E13TAG3 Diesel Engine – Electropak

392 kWm @ 1500 rpm

The 2200 range has been developed using the latest engineering techniques and builds on the strengths of the already very successful 2000 Series family. Developed from a proven heavy-duty industrial base, these products offer the superior performance and reliability required to meet today's uncompromising demands within the power generation industry.

The 2206C-E13TAG is a 6 cylinder, turbocharged air-to-air charge cooled diesel engine. Its premium features provide exceptional power to weight ratio resulting in exceptional fuel consumption.

The overall performance and reliability characteristics make this the prime choice for today's power generation industry.



Specification		
Number of cylinders	6 vertical in-line	
Bore and stroke	130 x 157 mm	5.1 x 6.1 in
Displacement	12.5 litres	763 in <sup>3</sup>
Aspiration	Turbocharged and air-to-air chargecooled	
Cycle	4 stroke	
Combustion system	Direct injection	
Compression ratio	16.3:1	
Rotation	Anti-clockwise, viewed on flywheel	
Total lubricating capacity	40 litres	10.5 US gal
Cooling system	Water-cooled	
Total coolant capacity	51.4 litres	13.6 US gal

[www.perkins.com](http://www.perkins.com)

Photographs are for illustrative purposes only and may not reflect final specification. All information in this document is substantially correct at time of printing and may be altered subsequently. Final weight and dimensions will depend on completed specification.

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THE HEART OF EVERY GREAT MACHINE

# 2000 Series 2206C-E13TAG3 Diesel Engine – Electropak

392 kWm @ 1500 rpm

## Features and benefits

### Economic power

- Mechanically operated unit fuel injectors with electronic control combined with carefully matched turbocharging, give excellent fuel atomisation and combustion with optimum economy
- Low emissions result from electronic control of fuel injected

### Reliable power

- Developed and tested using the latest engineering techniques and finite element analysis for high reliability, low oil usage and low wear rates
- High compression ratios ensure clean rapid starting in all conditions
- Perkins global product support is designed to enhance the customer experience of owning a Perkins powered machine. We deliver this through the quality of our distribution network, extensive global coverage and a range of Perkins supported OEM partnership options. So whether you are an end-user or an equipment manufacturer our engine expertise is essential to your success

### Compact, clean and efficient power

- Exceptional power to weight ratio and compact size give optimum power density for ease of installation and more cost effective transportation
- Designed to provide excellent service access for ease of maintenance

### Product support

- Perkins actively pursues product support excellence by ensuring our distribution network invest in their territory – strengthening relationships and providing more value to you, our customer
- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their fingertips covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts and service. We give 100% reassurance that you receive the very best in terms of quality for lowest possible cost .. wherever your Perkins powered machine is operating in the world

*Certified against the requirements of EU2007 Stage II (EU97/68/EC Stage II) legislation for non-road mobile machinery, powered by constant speed engines and is capable of meeting 1/2 TA Luft (1986) emissions legislation.*

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## Technical information

### Air inlet

- Mounted air filter

### Fuel system

- Mechanically actuated electronically controlled unit fuel injectors with full authority electronic control
- Governing to ISO 8528-5 class G2 with isochronous capability
- Replaceable 'Ecoplus' fuel filter elements with primary filter/water separator
- Fuel cooler

### Lubrication system

- Wet sump with filler and dipstick
- Full-flow replaceable 'Ecoplus' filter
- Oil cooler integral with filter header

### Cooling system

- Gear-driven circulating pump
- Mounted belt-driven pusher fan
- Radiator incorporating air-to-air charge cooler, (supplied loose)
- System designed for ambients up to 50°C

### Electrical equipment

- 24 volt starter motor and 24 volt 70 amp alternator with DC output
- ECM mounted on engine with wiring looms and sensors
- 3 level engine protection system

### Flywheel and housing

- High inertia flywheel to SAE J620 size 14
- SAE 1 flywheel housing

### Mountings

- Front engine mounting bracket

### Literature

- User's Handbook and Parts Manual

### Optional equipment

- 110 volt/240 volt immersion heater
- Additional speed sensor
- Temperature and pressure sensors for gauges
- Air filter rain hood
- Twin starters/facility for second starter
- Tool kit

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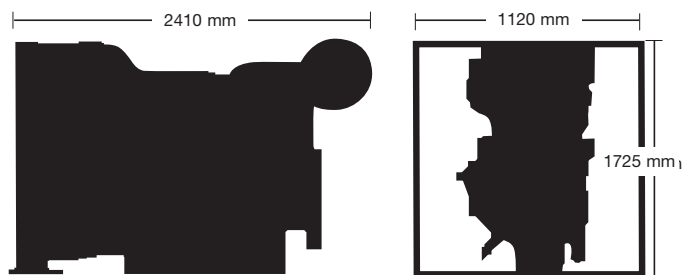
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# 2000 Series 2206C-E13TAG3 Diesel Engine – Electropak

392 kWm @ 1500 rpm



## Engine package weights and dimensions

Engine package weights and dimensions		
Length	2410 mm	95 in
Width	1120 mm	44 in
Height	1725 mm	68 in
Weight (dry)	1478 kg	3258 lb

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# 2000 Series 2206C-E13TAG3 Diesel Engine – Electropak

392 kWm @ 1500 rpm

Speed rpm	Type of operation	Typical generator output (Net)		Engine power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime power	400	320	368	493	349	468
	Standby power	450	360	413	554	392	526

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1, DIN 6271. Derating may be required for conditions outside these; consult Perkins Engines Company Limited.

Generator powers are typical and are based on an average alternator efficiency and a power factor (cos.  $\theta$ ) of 0.8. Fuel specification: BS 2869: Part 2 1998 Class A2 or BSEN590 or ASTM D975 Class 1D and 2D. Lubricating oil: 15W40 to API C14.

#### Rating definitions

**Prime power:** Variable load. Unlimited hours usage with an average load factor of 70% of the published prime power rating over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours of operation. **Standby power:** Variable load. Limited to 500 hours annual usage up to 300 hours of which may be continuous running. No overload is permitted.

Percent of prime power	Fuel consumption at 1500 rpm g/kWh	Fuel consumption at 1500 rpm l/hr
Standby power	202	94
110%	205	93
100%	206	85
75%	210	65
50%	218	46

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THE HEART OF EVERY GREAT MACHINE

# 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

