

450 KVA DIESEL GENERATOR

FEATURES & BENEFITS

- Maximum 500 kVA, 380V, 1500 RPM
- Constant voltage AVR (Automatic Voltage Regulator)
- 24V Electric Starter
- 715 Litre Fuel Tank, 9 Hours @ 75% load
- Silent Version (± 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

| | |
|--------------------------------|-------------|
| Model: | BPD450S3-P |
| 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: | 4700 mm |
| Width: | 1700 mm |
| Height: | 2230 mm |
| Weight: | 5200 kg's |
| Tank Capacity: | 715 l |

ADDITIONAL

| | |
|--------------------------------|----------------------|
| Running Time: | 9 Hours @ 75% load |
| Structure Type: | Silent |
| Noise Level (7m): | 72 dBA |
| Auto Voltage Regulator: | Constant voltage AVR |
| ISO9001 Certified: | Yes |
| CE Certified: | Yes |
| Fuel Cons. @ 100% Load: | 99 |
| Fuel Cons. @ 75% Load: | 75 |
| Fuel Cons. @ 50% Load: | 50 |

ENGINE DATA

| | |
|------------------------------|---|
| Brand: | Perkins |
| Model: | 2506C-E15TAG1 |
| Type: | 6 Cylinder, in-line, Water cooled, Turbocharged & Aftercooled |
| Starting System: | 24V Electric Starter |
| Auto-Decompression: | Yes |
| Cubic Capacity (l): | 15.0 |
| Compression Ratio: | 16:1 |
| Rated Power (kW/RPM): | 451 / 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: | 6 |
| Mains Phase Voltage: | Yes |
| Mains Line Voltage: | Yes |

ALTERNATOR

| | |
|-------------------------|--------------------------|
| Model: | Leroy Somer - TAL-A473-C |
| Pole Number: | 4 |
| Excitation Mode: | Self Excitation |

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2500 Series 2506C-E15TAG1 Diesel Engine – ElectropaK

435 kWm at 1500 rpm

The 2500 Series engine has been developed using the latest engineering techniques and builds on the strengths of the already very successful 2000 Series family and addresses today's uncompromising demands within the power generation industry. Developed from a proven heavy-duty industrial base, these products offer superior performance and reliability.

The 2506C-E15TAG1 is a turbocharged and air-to-air charge-cooled, 6 cylinder diesel engine. Its premium features provide economic and durable standby duty, exceptional power-to-weight ratio resulting in exceptional fuel consumption and low gaseous emissions and advanced overall performance and reliability making this the prime choice for today's power generation industry.



| Specification | | |
|----------------------------|---|---------------------|
| Number of cylinders | 6 vertical in-line | |
| Bore and stroke | 137 x 171 mm | 5.4 x 6.7 in |
| Displacement | 15.2 litres | 927 in ³ |
| Aspiration | Turbocharged and air-to-air charge cooled | |
| Cycle | 4 stroke | |
| Combustion system | Direct injection | |
| Compression ratio | 16:1 | |
| Rotation | Anti-clockwise, viewed on flywheel | |
| Total lubricating capacity | 62 litres | 16.4 US gal |
| Cooling system | Water-cooled | |
| Total coolant capacity | 58 litres | 15.3 US gal |

www.perkins.com

Photographs are for illustrative purposes only and may not reflect final specification.
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Final weight and dimensions will depend on completed specification.

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 **Perkins**[®]

THE HEART OF EVERY GREAT MACHINE

2500 Series 2506C-E15TAG1 Diesel Engine – ElectropaK

435 kWm at 1500 rpm

Features and benefits

Economic power

- Mechanically operated unit fuel injectors with advanced electronic control, combined with carefully matched turbocharging, give excellent fuel atomisation which leads to exceptional low fuel consumption

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 ratio ensures 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 gives 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 EU 2007 legislation for non-road mobile machinery, powered by constant speed engines (EU 97/68/EC Stage II)

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THE HEART OF EVERY GREAT MACHINE

2500 Series 2506C-E15TAG1 Diesel Engine – ElectropaK

435 kWm at 1500 rpm

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 G3 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 fan
- Radiator supplied loose incorporating air-to-air charge cooler
- 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 ½ flywheel housing

Mountings

- Front engine mounting bracket

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
- Additional manuals
- Closed circuit crankcase ventilation system

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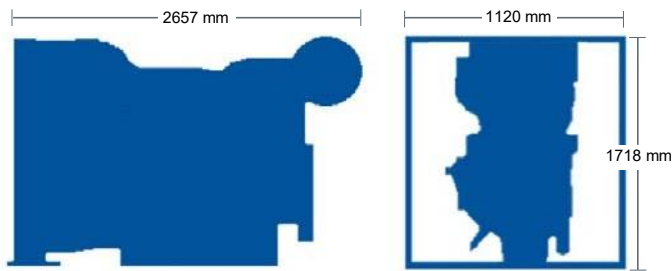
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THE HEART OF EVERY GREAT MACHINE

2500 Series 2506C-E15TAG1 Diesel Engine – Electropak

435 kWm at 1500 rpm



| Engine package weights and dimensions | | |
|---------------------------------------|---------|---------|
| Length | 2657 mm | 105 in |
| Width | 1120 mm | 44 in |
| Height | 1718 mm | 68 in |
| Weight (dry) | 1633 kg | 3600 lb |

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THE HEART OF EVERY GREAT MACHINE

2500 Series 2506C-E15TAG1 Diesel Engine – ElectropaK

435 kWm at 1500 rpm

| Speed rpm | Type of operation | Typical generator output (Net) | | Engine power | | | |
|-----------|-------------------|--------------------------------|-----|--------------|-----|-----|-----|
| | | | | Gross | | Net | |
| | | kVA | kWe | kWm | hp | kWm | hp |
| 1500 | Prime power | 455 | 364 | 412 | 552 | 396 | 531 |
| | Standby power | 500 | 400 | 451 | 605 | 435 | 583 |

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1. 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. θ) of 0.8. Fuel specification: BS 2869: Part 2 1998 Class A2 or ASTM D975 D2. Lubricating oil: 15W40 to API C14.

Rating definitions

Prime power: Power available at variable load with a load factor not exceeding 80% of the prime power rating. Overload of 10% is permitted for 1 hour in every 12 hours' operation. Standby power: Power available in the event of a main power network failure up to a maximum of 500 hours per year of which up to 300 hours may be run continuously. Load factor may be up to 100% of standby power. No overload is permitted.

| Percent of prime power | Fuel consumption at 1500 rpm g/kWh | Fuel consumption at 1500 rpm l/hr |
|------------------------|------------------------------------|-----------------------------------|
| Standby power | 217 | 109 |
| Prime power | 216 | 99 |
| 75% | 212 | 73 |
| 50% | 222 | 51 |

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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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Deep Sea Electronics Plc maintains a policy of continuous development and reserves the right to change the details shown on this data sheet without prior notice. The contents are intended for guidance only.

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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

