

## Features:

- Excitation system: self-excited
- ATS (automatic transfer switch) receptacle
- Lockable battery isolator switch
- Stainless galvanized zinc plates with strong corrosion resistance
- Vibration isolators between the engine/alternator and base frame
- Integrated wiring design
- Base fuel tank for at least 8 hours running
- Equipped with an industrial muffler
- Engine oil pump
- 50 C radiator
- Top lifting and steel base frame with forklift holes
- Drainage for fuel tank
- Complete protection functions and safety labels
- IP54 (soundproof sets), IP56 (control system)
- Water jacket preheater, oil heater and double air cleaner, etc. are available.



### Output Ratings

Generating Set Model	Prime	Standby
<b>EP2250</b>	2250kVA/1800kW	2475kVA/1980kW

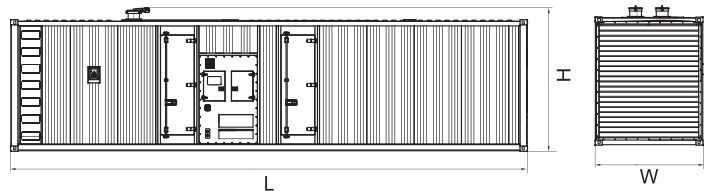
Ratings at 0.8 power factor.

### Ratings and Performance Data

<b>Engine Make &amp; Model:</b>	4016-61TRG3	
<b>Alternator Model:</b>	LSA51.2VL85	
<b>Alternator Brand:</b>	Leroy Somer	
<b>Control System:</b>	PLC-7420	
<b>Noise Level@7m:</b>	/	
<b>Circuit Breaker Type:</b>	/	
<b>Frequency &amp; Phase:</b>	50Hz & 3PH	
<b>Engine Speed: RPM</b>	1500	
<b>Structure Type:</b>	<b>EP2250</b>	C
<b>Fuel Tank Capacity: L</b>	<b>EP2250</b>	2000
<b>Fuel Consumption: l/hr (100% Load)</b>	<b>Prime</b>	/
	<b>Standby</b>	/

### Dimensions and Weights

Generating Set Model	Length (L) mm (in)	Width (W) mm (in)	Height (H) mm (in)	Dry kg (lb)	Wet kg (lb)
<b>EP2250</b>	12192	2438	3150	25530	/
Dry = With Lube Oil		Wet = With Lube Oil and Coolant			



Also available in the following voltages: 415/240V-380/220V-220/127V-200/115V;

ESP: Standby Power Standby duty, operation under variable load, without over load;

PRP: Prime Power-Continuous duty operation, under variable load 24/24h-10% over load permissible 1 hour/12 hours;

The data is only for your reference but not for use of sales.

M: Mechanical speed governor, E/ECCU: Electronic speed governor;

NA: Naturally aspirated, TC: Turbocharged, TCA: Turbocharged and air-air aftercooled. TCW: Water-cooled Turbocharged;

The weights are approximate and without fuel.

## Engine model: 4016-61TRG3

### Cooling system

Recommended coolant: 50% inhibited ethylene glycol or 50% inhibited propylene glycol and 50% clean fresh water. For CHP systems and where there is no likelihood of ambient temperature below 10°C, then clean soft water may be used, treated with 1% by volume

Maximum pressure in crankcase water jacket ... 170 kPa  
 Maximum top tank temperature (standby) ... 98°C  
 Maximum static pressure on pump ... 70 kPa

#### Total jacket coolant capacity

Electrounit (engine only) ... 95 litres  
 Maximum permissible restriction to coolant pump flow... 30 kPa  
 Thermostat operating range... 71 - 85°C  
 Ambient cooling clearance (standby power) based on air temperature at fan of 6°C above the ambient ...  
 ... dependent on radiator selection  
 Temperature rise across the engine (standby power) with Inhibited coolant @ 1500 rev/min. ... 5 - 9°C depending on rating  
 Coolant temperature shutdown switch setting ... 101°C Rising  
 Coolant immersion heater capacity (2 of) ... 4 kWe each

#### Water jacket cooling data

Coolant flow ... 21 l/s  
 Coolant exit temperature (Max.) ... 98°C  
 Coolant inlet temperature (Min.) ... 70°C  
 Coolant inlet temperature (Max.) ... 80°C  
 Water jacket coolant pump  
 Speed. ... 1.4 x e rev/min  
 Method of drive ... engine driven

#### Secondary water circuit

Coolant flow ... 12 l/s  
 Maximum permissible restriction to coolant pump flow... 60 kPa  
 Coolant inlet temperature (Min.) ... 10°C  
 Coolant inlet temperature (Max.) ... refer to derate charts

### Lubrication system

Recommended SAE viscosity:  
 Multigrade oil conforming to the following must be used API CG 15W/40 CH4.

**Note:** For additional notes on lubricating oil specifications, refer to the OMM (Operation and Maintenance Manual).

#### Total system capacity

Maximum sump capacity ... 213 litres  
 Minimum sump capacity ... 157 litres  
 Oil temperature at normal operating conditions ... 95°C  
 Oil temperature (in rail) maximum continuous operation ... 105°C

#### Lubricating oil pressure

At rated speed ... 400 kPa  
 Minimum @ 80°C... 340 kPa  
 Oil filter screen spacing... 40 microns  
 Sump drain plug tapping size. ... G1  
 Oil pump speed and drive method ... 1.4 x e rev/min engine driven  
 Shutdown switch - pressure setting ... 193 kPa Falling

#### Oil consumption

Prime power after running in (typically after 250 hours) 0.52 g/kWhr  
 Oil flow rate from pump... 6.7 litres / sec

### Fuel system

Recommended fuel to conform to ..BSEN590 or BS2869 Class A2  
 Injection system... direct  
 Fuel injection pump ... Combined unit injector  
 Injector pressure... 140 Mpa  
 Lift pump type... Tuthill TCH 5  
 Fuel delivery ... 1380 l/hr  
 Heat retained in fuel to tank ... 14 kW  
 Fuel inlet temperature to be less than ... 58°C  
 Maximum suction head at pump inlet... 2.5 m  
 Maximum static pressure head ... see manual  
 Fuel filter spacing ... 10 microns  
 Governor type... Electronic  
 Governing to ... ISO 8528-5 2004  
 Torque at the governor output shaft ... 1.631 kgm  
 Tolerance on fuel consumption to ... ISO 8528-1 1993

#### Fuel consumption

**Note:** Fuel consumption calculated on gross rated powers, based on an assumed density of 0.862.

### Induction system

Maximum air intake restriction of engine:  
 Clean filter ... 1.24 kPa  
 Dirty filter ... 3.71 kPa  
 Air filter type ... Donaldson

### Exhaust system

Exhaust outlet size (internal) ... 2 x 254 mm  
 Exhaust outlet flange size ... 10 inch table D  
 Back pressure for total system... 4 kPa

### Electrical system

Voltage ... 24  
 Alternator type... Insulated return  
 Alternator output ... 40 amps  
 Starter type ... 2 X 24 Volt electric  
 Starter motor power ... 16.4 kW  
 Number of teeth on flywheel (may change with flywheel) ... 156  
 Number of teeth on starter pinion... 12  
 Minimum cranking speed ... 120 rev/min  
 Starter solenoid pull-in current @ -25°C Max ... 30 amps  
 Starter solenoid hold-in current @ -25°C Max ... 9 amps  
 Stop solenoid hold-in current ... 1.1 amps

### Cold start recommendations

Down to 0°C  
 Oil ... SAE grade API CG 15W/40 CH4  
 Starter type. ... 2 x 24V  
 Battery ... 4 x 12V x 286Ah  
 Max breakaway current... 2000 amps  
 Cranking current. ... 957 amps  
 Minimum mean cranking speed ... 120 rev/min  
 Starting aids ... Block heaters

## Alternator model: LSA51.2VL85

### SPECIALLY ADAPTED FOR GENSET APPLICATIONS

The LSA 51.2 alternator is designed to be suitable for typical generator set applications, such as: backup, base production, cogeneration, marine applications, rental, telecommunications, etc.

### COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 51.2 alternator conforms to the main international standards and regulations:

IEC 60034, NEMA MG 1.22, ISO 8528/3, CSA, UL 1446, UL 1004B on request, marine regulations, etc. It can be integrated into a CE marked generator.

The LSA 51.2 is designed, manufactured and marketed in an ISO 9001 and ISO 14001 environment. ≤

### TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 6-wire winding, 2/3 pitch, type no. 6S.
- Voltage range 50 Hz : 380V - 400V - 415V - 440 V.
- Voltage range 60 Hz : 380V - 416V - 440V - 480V.
- Ability to reconnect : 50 Hz : 220V - 230V - 240V / 60 Hz : 220 V - 240 V : consult factory.
- Other voltages are possible with optional adapted windings :
  - 50 Hz : 440 V (no. 7S), 500 V (no. 9S), 600 V (no. 22S or 23S), 690 V (no. 10S or 52S)
  - 60 Hz : 380 V and 416 V (no. 8S), 600 V (no. 9S).
- High efficiency and motor starting capacity.
- Total harmonic content < 3,5 %.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for the European zone (CE marking).

### EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

The LSA 51.2 can be supplied with AREP or PMG excitation system, according to the alternator specification.

Standard excitation system is AREP with R 449 A.V.R.

Excitation system			Regulation options				
Volage regulator	AREP	PMG	C.T. Current transformer for paralleling	R 726 Mains paralleling	R 731 3 Phase sensing	R 734 3 Phase sensing for unbalanced mains paralleling	P Remote voltage potentiometer
R 449	Std	Option	√	√	√	√	√
D 510	Option	Option	√	included	included	consult factory	√

Voltage regulator accuracy ± 0.5%. - √ : adaptation possible

### PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 51.2 is IP 23.
- Standard winding protection for clean environments with relative humidity ≤ 95 %, including indoor marine environments.

Options:

- Filters on air inlet : derating 5%.
- Filters on air inlet and air outlet (IP 44) : derating 8%.
- Winding protections for harsh environments and relative humidity greater than 95%.
- Space heaters.
- Thermal RTD protection for winding.

### REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact and rigid assembly to better withstand genset or engine vibrations.
- Steel frame.
- Cast iron flanges and shields.
- Twin-bearing and single-bearing versions designed to be suitable for most engines on the market.
- Half-key balancing.
- Regreasable bearings.

### ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- Possible incorporation of accessories for paralleling, protection and measurement.

# Control System

## PLC-7420

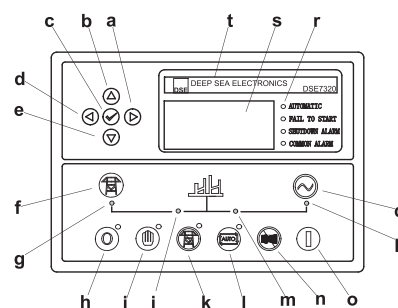
PLC-7420 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains is abnormal. Accurately measure various operational parameters and display all values and alarms information on the LCD. In addition, the control module can automatically shut down the engine and indicate the engine failure.

### FEATURES

- Microprocessor control, with high stability and credibility
- Monitoring and measuring operational parameters of the mains supply and genset
- Indicating operation status, fault conditions, all parameters and alarms
- Multiple protections; multiple parameters display, like pressure, temp. etc.
- Manual, automatic and remote work mode selectable
- Real time clock for time and date display, overall runtime display, 250 log entries
- Overall power output display
- Integral speed/frequency detecting, telling status of start, rated operation, overspeed etc.
- Communication with PC via RS485 OR RS232 interface, using MODBUS protocol



- a Button (next page)
- b Button (increase value / previous item)
- c Button (accept)
- d Button (previous page)
- e Button (decrease value / next item)
- f Button (transfer the load to the mains supply, when in Manual mode only)
- g Mains supply available LED
- h Stop / Reset button
- i Manual button (Manual control mode)
- j Mains supply on load LED
- k Test button (Test mode) | Auto button (Auto mode)
- m Genset on load LED      n Mute/Lamp test button
- o Start button (Manual)      p Genset available LED
- q Button (transfer the load to the genset, when in Manual mode only)
- r Alarm LED (4 alarm items)
- s LCD display
- t Control module name



Control Panel