

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
EP1500	1500kVA/1200kW	1650kVA/1320kW

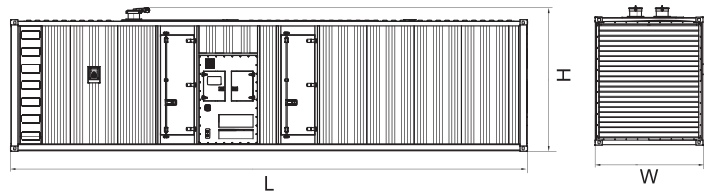
Ratings at 0.8 power factor.

Ratings and Performance Data

Engine Make & Model:	4012-46TAG2A	
Alternator Model:	LSA50.2L8	
Alternator Brand:	Leroy Somer	
Control System:	PLC-7420	
Noise Level@7m:	/	
Circuit Breaker Type:	/	
Frequency & Phase:	50Hz & 3PH	
Engine Speed: RPM	1500	
Structure Type:	EP1500	C
Fuel Tank Capacity: L	EP1500	2000
Fuel Consumption: l/hr (100% Load)	Prime	/
	Standby	/

Dimensions and Weights

Generating Set Model	Length (L) mm (in)	Width (W) mm (in)	Height (H) mm (in)	Dry kg (lb)	Wet kg (lb)
EP1500	12192	2438	3150	20220	/
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: 4012-46TAG2A

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 of Perkins inhibitor in the cooling system. The inhibitor is available in 1 litre bottles from all Perkins Distributors.

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

Total coolant capacity

Electronit (engine only) ... 73 litres
 ElectropaK
 -temperate (engine and radiator) .. 196 litres
 -tropical (engine and radiator) ... 201 litres
 Maximum permissible restriction to coolant pump flow. 20 kPa
 Thermostat operating range.. 71 - 85 °C
 Temperature rise across the engine (standby power) with inhibited coolant .. 8 °C
 Shutdown switch setting ... 101 °C (rising)
 Coolant immersion heater capacity... 2 x 4 kW

Water jacket cooling data

Coolant flow .. 948 l/min
 Coolant exit temperature (max). ... 98 °C
 Coolant inlet temperature (min). ... 70 °C
 Coolant inlet temperature (max) ... 85 °C

Cooling clearance

4012-46TWG2A - Temperate

Maximum additional restriction (duct allowance) to cooling airflow, and resultant min airflow			
Description	°C	Pa	m³/sec
Ambient clearance: Inhibited coolant	35	N/A	N/A
Duct allowance	35	250	N/A
Minimum airflow	35	250	22

Fuel system

Injection system direct injection
 Fuel injection pump/Injector type Combined unit injector
 Injector pressure 23,4 MPa
 Fuel lift pump type..... Gerotor
 Delivery flow..... 1020 litres/hr
 Heat retained in fuel to tank
 -4012-46TWG2A 8,5 kW
 -4012-46TWG3A 9,0 kW
 Fuel inlet temperature to be less than 58 °C
 Delivery pressure 300 kPa
 Maximum suction head at pump inlet 24,5 kPa
 Maximum static pressure head see installation manual for details
 Fuel filter spacing 10 microns
 Governing type..... electronic
 Governing to ISO 8528-5 2005
 Torque at the governor output shaft..... 1-631
 Tolerance on fuel consumption..... to ISO 8528-1 1993

Fuel specification

Recommended fuel to conform to: -BS2869 1998 class A2 or BS EN590

Coolant pump

-speed 1.4 x engine rev/min
 -method of drive engine (gear) driven

Radiator

Face area
 -temperate .. 2630400 mm²
 -tropical... 2967420 mm²
 Number of rows and material . 226
 Fins per inch and material .. 7
 Width of matrix
 -temperate .. 1600 mm
 -tropical... 1805 mm
 Height of matrix .. 1644 mm
 Weight (dry)
 -temperate .. 780 kg
 -tropical... 843 kg
 Total coolant capacity
 -temperate .. 123 litres
 -tropical... 128 litres
 Pressure cap setting (min) . 69 kPa

Fan

Type engine driven
 Diameter
 -temperate .. 1400 mm
 -tropical... 1530 mm
 Number of blades 12
 Material..... Aluminium
 Drive ratio
 -temperate .. 1:1
 -tropical... 1:0,9

4012-46TWG2A - Tropical

Maximum additional restriction (duct allowance) to cooling airflow, and resultant min airflow			
Description	°C	Pa	m³/sec
Ambient clearance: Inhibited coolant	50	N/A	N/A
Duct allowance	50	125	N/A
Minimum airflow	50	125	28

Engine model: 4012-46TAG2A

Fuel consumption

Note: All fuel consumption figures are based on assumed fuel density of 0.862.

4012-46TWG2A - Temperate

Designation	Fuel consumption calculated on nett rated powers	
	1500 rev/min	
	g/kWh	litres/hr
Standby	212	287
Prime power	211	258
Baseload power	213	206
At 75% of Prime power	214	196
At 50% of Prime power	230	141

4012-46TWG2A - Tropical

Designation	Fuel consumption calculated on nett rated powers	
	1500 rev/min	
	g/kWh	litres/hr
Standby	213	288
Prime power	212	259
Baseload power	214	207
At 75% of Prime power	216	196
At 50% of Prime power	233	143

Electrical system

Alternator
 -type insulated return
 -voltage 24 volts
 -output 40 amps
 Starter
 -type (axial) electric
 -motor voltage 24 volts
 -motor power 16,4 kW
 Number of teeth on
 -flywheel 156
 -starter motor 12
 Minimum cranking speed 120 rev/min
 Starter solenoid (24V)
 -pull in current @ -25 °C max. 30 amps
 -hold in current @ -25 °C max 9 amps
 Engine stop solenoid current 1,1 amps

Engine mounting

Maximum static bending moment at rear face of block . . 1356 Nm
 Maximum additional load applied to flywheel due to rotating components 850 kg

Centre of gravity

Bare engine (wet) 4012-46TWG2A / 4012-46TWG3A
 -forward of rear face of cylinder block 658 mm
 -above crankshaft centre line. 32 mm
 ElectropaK (wet) - Temperate
 -forward of rear face of cylinder block 960 mm
 -above crankshaft centre line. 32 mm
 ElectropaK (wet) - Tropical
 -forward of rear face of cylinder block 1286 mm
 -above crankshaft centre line. 32 mm

Cold start recommendations

Temperature range	
Down to 0 °C (32 °F)	Oil:API CH4 15W40 Starter: 2 x 24 volts Battery: 4 x 12V 286 Ah Max breakaway current: 1600 amps Cranking current: 810 amps Aids: block heaters Min mean cranking speed:..... 120 rev/min

Notes:

- The battery capacity is defined by the 20 hour rate
- The oil specification should be for the minimum ambient temperature as the oil will not be warmed by the immersion heater
- Breakaway current is dependant on battery capacity available. Cables should be capable of handling the transient current which may be up to double the steady cranking current.

Lubrication system

Recommended multigrade oil viscosity (15W40) which adequately meets the specifications of API CH4. For further details refer to the engine OMM.

Lubricating oil capacity

Total system 177 litres
 Sump maximum 157,5 litres
 Sump minimum 115 litres
 Oil temperature at normal operating conditions 95 °C
 Oil temperature (in rail) - maximum continuous operation .. 105 °C

Lubricating oil pressure

minimum..... 340 kPa
 At rated speed.400 kPa
 Oil relief opens400 kPa
 Oil filter screen spacing 20 microns
 Sump drain plug tapping size G1
 Lubricating oil pump speed1.4 x engine rev/min
 Lubricating oil pump drive method engine driven
 Shutdown switch - pressure setting (where fitted) 193 kPa (falling)

Normal operating angles

-front and rear..... 5°
 -side tilt 10°

Oil consumption (prime power)		4012-46TWG2A	4012-46TWG3A
After running-in (typically after 250 hours)	g/kWhr	0,52	0,52
Oil flow rate from oil pump	l/s	6,0	6,0

Alternator model: LSA50.2L8

SPECIALLY ADAPTED FOR APPLICATIONS

The LSA 50.2 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 50.2 alternator conforms to the main international standards and regulations:
IEC 60034, NEMA MG 1.22, ISO 8528, CSA/UL on request, marine regulations, etc.
It can be integrated into a CE marked generator.
The LSA 50.2 is designed, manufactured and marketed in an ISO 9001 environment.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 6-wire re-connectable winding, 2/3 pitch, type no. 6S.
- Voltage range 50 Hz : 380V - 400V - 415V - 440 V and 220V - 230V - 240V ,
- Voltage range 60 Hz : 380V - 416V - 440V - 480V and 220 V - 240 V.
- High efficiency and motor starting capacity.
- 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).
- THD Total harmonic distortion < 3.5% (full load)..
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

The LSA 50.2 can be supplied with AREP or PMG excitation system, according to the alternator specification.

Excitation system			Regulation options				
Volage regulator	AREP	PMG	T.I. Current transformer for paralleling	R 726 Mains paralleling	R 731 3 Phase sensing	R 734 3 Phase sensing for mains paralleling unbalanced	P Remote voltage potentiometer
R 450	Std	Option	√	√	√	√	√
D 510	Option	Option	√	included	included	contact factory	√

Voltage regulator accuracy +/- 0.5%. √ : possible mounting

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 50.2 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 10%.
 - Winding protections for harsh environments and relative humidity greater than 95%.
 - Space heaters.
 - Thermal protection for winding.

REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact and rigid assembly to better withstand generator vibrations.
- Steel frame.
- Cast iron flanges and shields.
- Twin-bearing and single-bearing versions designed to be suitable for engines on the market.
- Half-key balancing.
- Sealed for life ball bearings, regreasable bearings (optional).
- Standard direction of rotation : clockwise when looking at the drive end view (for anti-clockwise, derate the machine by 5%).

ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- Possible inclusion of accessories for paralleling, protection and measurement.
- Connection bars for winding reconnection.

Control System

PLC-7420

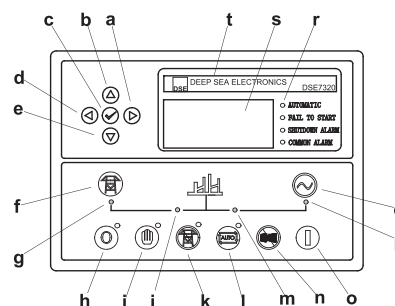
PLC-7420 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains is abnormal. Accurately measure various operational 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) | l 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