



## Features:

- Excitation system: self-excited (AREP and PMG are optional)
- 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
WPS500/S	500kVA/400kW	550kVA/440kW

Ratings at 0.8 power factor.

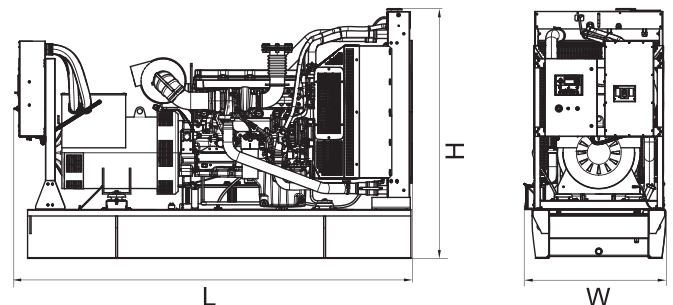
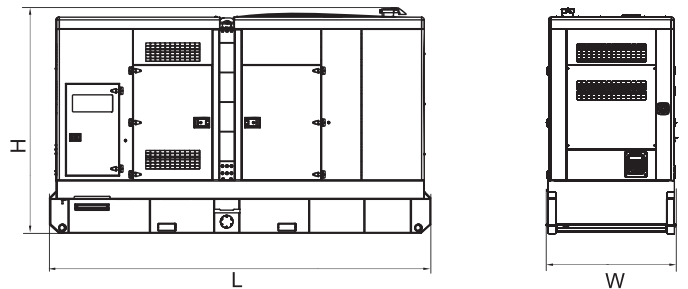
### Ratings and Performance Data

<b>Engine Make &amp; Model:</b>	2506C-E15TAG2	
<b>Alternator Model:</b>	LSA47.2M7	
<b>Alternator Brand:</b>	Leroy Somer	
<b>Control System:</b>	PLC-920 / 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>	WPS500	B
	WPS500S	R
<b>Fuel Tank Capacity: L</b>	WPS500	950
	WPS500S	1020
<b>Fuel Consumption: l/hr (100% Load)</b>	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)
WPS500	3750	1165	2731	3797	/
WPS500S	4512	1543	2553	5228	/

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/ECU: 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: 2506C-E15TAG2

### Cooling system

Recommended coolant:

50% inhibited ethylene glycol or 50% inhibited propylene glycol and 50% clean fresh water. Where there is no likelihood of ambient temperatures below 10 °C, clean 'soft' water may be used, treated with 1% by volume of Perkins inhibitor in the cooling system. The inhibitor is available from all Perkins Distributors.

Total system coolant capacity ... 58,0 litres  
Maximum pressure:

-in crankcase water jacket. ... 276 kPa

Maximum top tank temperature ... 107 °C

Maximum static pressure on pump ... 170 kPa

Maximum permissible restriction:

-to coolant pump flow ... 30 kPa

Temperature rise across engine with inhibited coolant:

-standby power @ 1500 and 1800 rev/min ... 10 °C

-prime power @ 1500 and 1800 rev/min ... 9 °C

Thermostat operation range ... 88 to 98 °C

### Radiator

-face area ... 1-238 m<sup>2</sup>

-weight (dry) ... 132 kg

-rows and materials ... 2 rows, Aluminium

-matrix density and material ... 12 fins per inch, Aluminium

-width of matrix ... 1048 mm

-height of matrix ... 1100 mm

-pressure cap setting (minimum) ... 69 kPa

### Charge cooler with integral radiator

-face area ... 1-006 m<sup>2</sup>

-number of rows and material ... 1 row, Aluminium

-matrix density and material ... 12,5 fins per inch, Aluminium

-width of matrix ... 915 mm

-height of matrix ... 1100 mm

### Coolant pump

Speed:

-1500 rev/min ... 1622 rev/min

-1800 rev/min ... 1946 rev/min

Method of drive ... gear

### Fan

-diameter ... 927 mm

-drive ratio ... 0-92:1

-number of blades ... 9

-material ... B3WG6 or PA6GF30 Nylon 6 glass filled 30%

-type ... ACS 367500

### Exhaust system

Maximum back pressure ... 6,8 kPa

Exhaust outlet size (internal) ... 127 mm

#### Recommended exhaust pipe diameter

length	1500 rev/min	1800 rev/min
	mm	mm
up to 10m	125	150
10m to 20m	150	150
20m to 30m	150	200

### Cooling clearance

Ambient cooling clearance (standby power) based on air temperature at fan of 6 °C above the ambient

2506C-E15TAG2 maximum additional restriction (duct allowance) to cooling airflow and resultant minimum airflow			
Duct allowance with inhibited coolant at 50 °C			
Description	rev/min	Units	Standby
Duct allowance	1500	kPa	0-125
	1800	kPa	0-125
Minimum airflow	1500	m <sup>3</sup> /min	660
	1800	m <sup>3</sup> /min	822
Duct allowance with 50% glycol at 43 °C			
Duct allowance	1500	kPa	0-200
	1800	kPa	0-200
Minimum airflow	1500	m <sup>3</sup> /min	576
	1800	m <sup>3</sup> /min	822

### Electrical system

Type ... 12V negative earth

Alternator

-type ... 22SI

-voltage ... 24 volts

-output ... 70 amps

Starter

-type ... 42MT

-motor voltage ... 24 volts

-motor power ... 7,5 kW

Number of teeth

-on the flywheel ... 113

-on starter pinion ... 11

Minimum cranking speed ... 100 rev/min

Pull-in current of starter motor solenoid

@ -25 °C max <sup>(1)</sup> ... 57 amps

Hold-in current of starter motor solenoid

@ -25 °C max <sup>(1)</sup> ... 16 amps

1. All leads to rated at 10 amps minimum

### Fuel system

Type of injection ... MEUI

Injector type ... MEUI

Injector pressure ... 200 MPa

### Fuel lift pump

type ... gear driven

Delivery flow:

-1500 rev/min ... 413 litres/hr

-1800 rev/min ... 457 litres/hr

Pressure ... 550 kPa

Maximum suction head at pump inlet ... 3 m

Maximum static pressure head ... 4 m

Fuel inlet temperature to be less than ... 55 °C

Governor type ... electronic

Governing to ... ISO 8528-5 class G3 steady state

### Fuel filtration level

-primary ... 10 µm

-secondary ... 2 µm



## Alternator model: LSA47.2M7

### SPECIALLY ADAPTED FOR APPLICATIONS

The LSA 47.2 alternator is designed to be suitable for typical generator applications, such as: stand-by, prime power, cogeneration, marine, rental, telecommunications, etc.

### COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 47.2 alternator conforms to the main international standards and regulations:

IEC 60034, NEMA MG 1.22, ISO 8528, CSA/UL request, marine regulations, etc.

It can be integrated into a CE marked generator-set.

The LSA 47.2 is designed, manufactured and marketed in an ISO 9001 environment and ISO 14001.

### TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 12-wire re-connectable winding, 2/3 pitch, type no. 6 (the LSA 47.2 L9 is available in two versions: 6-wire and 12-wire).
- Voltage range: 220 V - 240 V and 380 V - 415 V (440 V) - 50 Hz / 208 V - 240 V and 380 V - 480 V - 60 Hz.
- High efficiency and motor starting capacity.
- Other voltages are possible with optional adapted windings:
  - 50 Hz: 440 V (no. 7), 500 V (no. 9), 600 V (no. 23), 690 V (no. 52)
  - 60 Hz: 380 V and 416 V (no. 8), 600 V (no. 9).
- THD Total harmonic distortion < 2% (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

Excitation system				Regulation options				
Voltage regulator	SHUNT	AREP	PMG	T.I. Current transformer for paralleling	R 726 Mains paralleling	R 731 3-phase sensing	R 734 3-phase sensing on mains paralleling unbalanced	P Remote voltage potentiometer
R 250	Std	-	-	-	-	-	-	√
R 450	optional	Std	Std	√	√	√	√	√
D 510	optional	optional	optional	√	included	included	included	√

Voltage regulator accuracy ± 0.5%

√: possible mouting

### PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 47. 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 windings and shields.

### REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Standard direction of rotation : clockwise when looking at the drive end view (engine side).  
Running unit anti-clockwise: a derate of 5% must be applied.
- Compact and rigid assembly to better withstand generator-set vibrations.
- Steel frame.
- Cast iron flanges and shields.
- Two bearing and single bearing versions designed to be suitable for engines on the market.
- Half-key balancing.
- Greased for life bearings (regreasable bearings optional)

### ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- Possible clusion of accessories for paralleling, protection and measurement.
- 9-way terminal block for voltage reconnection.



**WPS500 / WPS500S**

# Control System PLC-920 (Optional)

Multiphase Power PLC-920 generator controllers integrating digital, intelligent and network techniques are used as the automatic control systems for diesel generators. It can carry out functions including pre-alarm, warning & electrical trip, fail monitoring and controls etc.

## FEATURES

- Parameter configuration via RS-232 serial communication;
- Log last 50 events & alarm information with measured values;
- Statistics records;
- Remote start/stop;
- Speed sensing from alternator voltage or magnetic pickup;
- Configurable 3 inputs and 6 outputs;
- ECU powers, ECU stop, STOP or fuel solenoid selection;
- Automatic transfer switching control and engine control;
- Adjustable start, load and stop timers.



## SPECIFICATION

- Dimensions: 111mm\*81mm\*61mm
- Protection: IP65 at front panel
- Operating temperature: -20 °C to 70 °C
- Max. Operating current is 360mA
- Sender measurement: 0 to 1300 ohm
- Panel cut-out: 81mm\*70mm
- Weight: approximately 0.3kg
- DC battery supply voltage: 8 to 32Vdc
- CT secondary: 5A
- Accuracy: 1%FS, resolution: 1 ohm

## FUNCTION

- Pre-Alarm
- Engine temperature
- Oil pressure
- Over/under voltage
- Over/under frequency
- Over/under speed
- Warning & Electrical trip
- Over current
- Short circuit
- Error
- Over/under speed
- Speed loss
- Battery low
- Battery high
- Maintenance
- Over current
- Short circuit
- Engine stop
- Can bus
- Charge alternator
- Fail monitoring
- Emergency stop
- Multiple engage fail
- Failed to start
- Low oil pressure
- High temperature
- Speed failure
- Voltage
- Charging fail
- Shutdown
- Warning
- Controls
- Fuel and stop solenoid
- ECU power and stop
- Starter motor
- Automatic generator start
- Preheat
- External alarm horn
- Engine cooling
- Idle mode

## Control System function list

	MODEL	PLC-920	PLC-7420	
General Accessory	AVR	●	●	
	Electronic Governing	×	×	
	Glow plug control	●	●	
	Cycle Cranking	●	●	
	(MODBUS) Networking	×	●	
	Fault History	●	●	
Operator Interface	manual start/stop	●	●	
	Auto/remote start	●	●	
	Regular Test	●	●	
	Auto operation LED	●	●	
	Manual operation LED	●	●	
	Common Shutdown LED	●	●	
	Common warning LED	●	●	
	Fail to start LED	●	●	
	Emergency stop(local)	●	●	
	Alphanumeric screen	●	●	
Measurement and Instrumentation	Remote start input active LED	×	●	
	Alarm reset	●	●	
	Engine	Oil pressure	●	●
		Water Temperature	●	●
		Engine Speed	●	●
		Hours Run	●	●
	Alternator	Number of Starts	●	●
		Battery Voltage	●	●
		Coolant Temperature	●	●
		3Phase-L Voltage&Frequency	●	●
		3phase Current	●	●
		Frequency	●	●
		kWh	●	●
		Apparent Power	●	●
Active Power and Reactive Power		●	●	
Power Factor		●	●	
Per PhasekW, MWr	●	●		
Per Phase kVA	●	●		
Mains Expression	Phase Voltage	●	●	
	Output Power	×	●	
	Grid Line Voltage	×	●	
Shutdown Protection and Indication	Grid Phase Voltage	×	●	
	Grid Frequency	×	●	
	Engine	Low Fuel Level	●	●
		High Fuel Level	×	○
		Low Oil Pressure	●	●
		High Water Temperature	●	●
	Alternator	Failure to Stop	●	●
		Failure to Start	●	●
		Controllable start circles/times	×	●
		Overspeed	●	●
Under/Over Voltage		●	●	
Under/Over Frequency		●	●	
Threshold Warning/Indication	Overcurrent	●	●	
	Earth Leakage	○	○	
	Reverse Power	×	×	
	Reverse kW	×	×	
	Low Oil Pressure	●	●	
	Low Water Temperature	○	○	
	High Water Temperature	●	●	
	Low Water Level	●	●	
	Low/High Battery Voltage	●	●	
	Paralleling Capability	Failure to Charge	●	●
Overcurrent		●	●	
Overload		●	●	
genset Under/Over Voltage		●	●	
genset Under/Over Frequency		●	●	
under/over Speed		●	●	
High Engine Temperature		●	●	
Earth Leakage		○	○	
Synchroscope(Independent Bus)		×	×	
Active and Reactive Power Control		×	×	
Power Transfer Function	Synchroscope(Shared Bus)	×	×	
	Synchronization Detector	×	×	
	Peak Lopping	×	×	
	Automatic Transfer	○	●	
	Hard Closed Transition	●	●	
	Soft Closed Transition	×	×	
	Gen/Mains Breaker	×	●	
	Gen/Mains Breaker Status Protection	×	●	
	Speed/Voltage Control	×	×	
	Power Indication	×	●	
Environment	Fuel&Solenoid Valve Control	●	●	
	Starter Control	●	●	
	Preheating	○	○	
	Mains Transfer Switch (Standard)	×	●	
	Mains Transfer Switch (Emergency)	×	●	
	Operating Temperature (-40 °C-70 °C)	●	●	
	Ambient Temperature (-25 °C-45 °C)	●	●	
	Humidity ≤80%	●	●	
	Monitoring Function	Grid Over/Under Voltage Control	×	●
		Grid Over/Under Frequency Control	×	●
Remote Start Output(Load/No-load)		●	●	
Optional Relay Output		●	●	
Remote Telecom Control with All Functions		×	●	
Engine Instrument Monitoring		●	●	
Alternator Output Instrument Monitoring		●	●	
Connection Point with All-around Setting For 4 Users		●	●	
3 Users Input Connection Point		●	●	
LCD Light Control of Low Light Operation Environment		●	●	
Monitoring Function	Safe PIN Code	●	●	
	RS232/485 Interface	×	●	
	Language Selection	●	●	
	Multi-Language Function	●	●	



## Control System

**Digital, intelligent control system allows easier operation.**

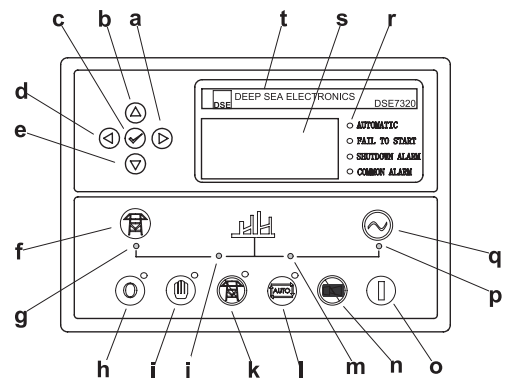
## PLC-7420

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



**Control Panel**

- 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



### Optional

Engine	Alternator	Generator Set	Fuel System	Canopy
<ul style="list-style-type: none"><li>• Water Jacket Preheater</li><li>• Oil Preheater</li></ul>	<ul style="list-style-type: none"><li>• Winding Temperature Measuring Instrument</li><li>• Alternator Preheater</li><li>• PMG</li><li>• Anti-damp and anti-corrosion treatment</li><li>• Anti-condensation heater</li></ul>	<ul style="list-style-type: none"><li>• Tools with the machine</li></ul>	<ul style="list-style-type: none"><li>• Low fuel level alarm</li><li>• Automatic fuel feeding system</li><li>• Fuel T-valves</li></ul>	<ul style="list-style-type: none"><li>• Trailer</li></ul>
Lubricating System	Exhaust System	Cooling System	Control Panel	Voltages
<ul style="list-style-type: none"><li>• Oil with the machine</li></ul>	<ul style="list-style-type: none"><li>• Protection board from hotness</li></ul>	<ul style="list-style-type: none"><li>• Front heat protection</li><li>• Coolant (-30°C)</li></ul>	<ul style="list-style-type: none"><li>• Remote control panel</li><li>• PLC-920</li><li>• PLC-7420</li><li>• ATS</li></ul>	<ul style="list-style-type: none"><li>• 415/240V</li><li>• 400/230V</li><li>• 380/220V</li><li>• 220/127V</li><li>• 200-115V</li></ul>



[www.multiphase-power.com](http://www.multiphase-power.com)

Multiphase Power reserves the right to make changes in model, technical specification, color, configuration and accessories without prior notice. Please contact the salesman before ordering.

