EP Series

WPS60 / WPS60S

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℃ 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
WPS60/S	60kVA/48kW	66kVA/52.8kW

Ratings at 0.8 power factor.

Ratings and Performance Data

Engine Make & Model:		1103A-33TG2
Alternator Model:		ECO32-2L/4
Alternator Brand:		MECC
Control System:		PLC-920 / PLC-7420
Noise Level@7m:		/
Circuit Breaker Type:		/
Frequency & Phase:		50Hz & 3PH
Engine Speed: RPM		1500
Structure Type:	WPS60	B
	WPS60S	R
Fuel Tank Capacity: L	WPS60	220
	WPS60S	180
Fuel Consumption: l/hr (100% Load)	Prime	/
	Standby	/

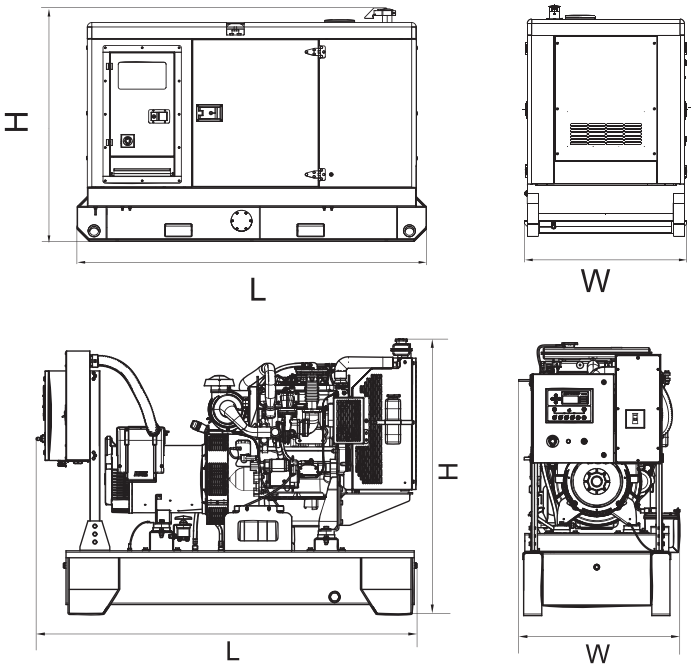
Also available in the following voltages: 415/240V-380/220V-220/127V-200/115V;
ESP: Standby Power Standby duty, operation under variable load, without over load;
PRP: Prime Power-Continuous duty operation, under variable load 24/24h-10% over load permissible 1 hour/12 hours;
The data is only for your 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.

Dimensions and Weights

Generating Set Model	Length (L) mm (in)	Width (W) mm (in)	Height (H) mm (in)	Dry kg (lb)	Wet kg (lb)
WPS60	1914	817	1384	894	/
WPS60S	2338	1115	1561	1446	/

Dry = With Lube Oil Wet = With Lube Oil and Coolant



EP Series

WPS60 / WPS60S

Engine model: 1103A-33TG2

Cooling system

Radiator

- face area . . . . . 0.276 m² (2.97 ft²)
- rows and materials . . . . . single row aluminium
- matrix density and material . . . . . Aluminium 12,5 fins/inch
- width of matrix . . . . . 526 mm (20.7 in)
- height of matrix . . . . . 524 mm (20.6 in)
- pressure cap setting . . . . . 107 kPa

Fan

- diameter . . . . . 457mm (18 in)
- drive ratio . . . . . 1.25 : 1
- number of blades 7
- material . . . . . Composite
- type . . . . . Pusher

Coolant

Total system capacity
- with radiator . . . . . 10.2 l (21.5 pt)
- without radiator . . . . . 4.4 l (9.2 pt)

Maximum top tank temperature . . . . . 110 °C (230 °F)
Thermostat operating range . . . . . 82 - 93 °C (180 - 199 °F)
Recommended coolant: 50 % ethylene glycol with a corrosion inhibitor (BS 658 : 1992 or MOD AL39) and 50% clean fresh water.

Electrical system

Type . . . . . Negative ground
Alternator voltage . . . . . 12 V
Alternator output . . . . . 65 amps
Starter motor voltage . . . . . 12 V
Starter motor power . . . . . 3 kW
Number of teeth on flywheel 126
Pull in current of starter motor solenoid . . . . . 60 amps
Hold in current of starter motor solenoid . . . . . 15 amps
Engine stop solenoid . . . . . 12 V
Stop solenoid (minimum)
- pull in current . . . . . 10 amps
- hold in current . . . . . 10 amps

Cold start recommendations

Minimum cranking speed . . . . . 105 rev/min

Starter specification

Starter motor type	Minimum starting temperature	Lubricating oil viscosity SAE / battery type - values in CCA			
	°C (°F)	15W/40	10W/40	5W/40	5W/30
12 volt 3.0 kW	-10 (14)	1 x 660			
	-15 (5) *		1 x 660		
	-20 (-4) *			1 x 660	
	-25 (-13) *				2 x 570

* - Glow plug start aid fitted.

CAA - Cold Cracking Amps to SAEJ537.

Exhaust system

Maximum back pressure
- 1500 rev/min . . . . . 10 kPa
- 1800 rev/min . . . . . 15 kPa

Exhaust outlet size . . . . . 56 mm (2.2 in)

Fuel System

Type of injection . . . . . Direct
Fuel injection pump . . . . . Rotary
Fuel atomiser . . . . . Multi-hole
Nozzel opening pressure . . . . . 29,0 MPa (290 bar)

Fuel lift pump

Type . . . . . Electrical
-flow/hour . . . . . 120 - 150 l/h (211 - 264 pt/m)
-pressure . . . . . 30 - 75 kPa (4.4 - 10.9 psi)
Maximum suction head:
- 1500 rev/min . . . . . 20 kPa

Governor type

Electronic governor (optional) . . . . . Woodward LCG2
Mechnical and electronic governor speed control to . . ISO 8528, G2

Fuel specification

Fuel Specification	European RF75-T-96 / DIN EN590 / BS2869 class A2
Density (kg/l @ 15 °C	0,835 - 0,845
Viscosity (mm²/s @ 40 °C	2,5 - 3,5
Sulphur content (%)	0,1 - 0,2
Cetane number	45 - 50

Fuel consumption litres/hour (UK gals/hr)

	Power rating				
Speed	**110%**	**100%**	**75%**	**50%**	**25%**
1500	15,4 (3.3)	13,9 (3.0)	10,4 (2.2)	7,2 (1.5)	4,1 (0.9)
1800	18,2 (4.0)	16,6 (3.6)	12,5 (2.7)	8,8 (1.9)	5,1 (1.1)

Induction system

Maximum air intake restriction

-clean filter . . . . . 5 kPa
- dirty filter . . . . . 8 kPa
- air filter type . . . . . Dry

Lubrication system

Lubricating oil capacity

Total system . . . . . 8,3 l (17.5 pt)
Sump minimum . . . . . 6,2 l (13.1 pt)
Sump maximum . . . . . 7.8 l (16.4 pt)
Maximum engein operating angles:
- front up, front down, right side or left side . . . . . 25°

Lubricating oil pressure

- relief valve opens . . . . . 415 - 470 kPa
- at maximum no-load speed . . . . . 276 - 414 kPa

Max continuous oil temperature (in rail) . . . . . 125 °C (257 °F)
Oil consumption at full load as a % of fuel consumption . . . 0.15%

POWERINK Power Systems

EP Series

WPS60 / WPS60S

Alternator model: ECO32-2L/4

Electrical Characteristics									
Frequency		Hz	50				60			
Voltage (series star)		V	380	400	415	440	415	440	460	480
Rated power class H		kVA	63	63	63	52	63	71	75,5	75,5
		kW	50	50	50	42	50	56,8	60,4	60,4
Rated power class F		kVA	60	60	60	47	58	68	72	72
		kW	48	48	48	38	46	54	57,6	57,6
Regulation with		DSR	±1 % with any power factor and speed variations between -5% +30%							
Insulation class			H							
Execution			Brushless							
Stator winding			12 ends							
Rotor			with damping cage							
Efficiencies class H	4/4	%	90,1	90,2	89,9	89,4	92,1	92,6	92,7	92,8
(see graph. for details)	3/4	%	90,5	90,8	90,7	90,4	92,7	92,9	93,1	93,3
	2/4	%	89,4	89,5	89,5	89,5	90,8	90,9	91	91,1
	1/4	%	86,2	86	85,8	85,5	87	87	87	87

Reactances (f. l.cl. F)	Xd		314,1	283,5	263,4	193,4	316,5	317,3	308,7	284
	Xd'		14,85	13,4	12,45	9,14	14,96	15,00	14,59	13,4
	Xd"		7,91	7,14	6,63	4,87	7,97	7,99	7,77	7,14
	Xq		123,0	111	103,1	75,7	123,9	124,2	120,9	111
	Xq'		123,0	111	103,1	75,7	123,9	124,2	120,9	111
	Xq"		38,3	34,6	32,1	23,6	41,5	36,8	34,6	34,6
	$_2$		25,93	23,4	21,74	15,96	26,12	26,19	25,48	23,4
	X_0		3,49	3,15	2,93	2,15	3,52	3,53	3,43	3,15
Short Circuit Ratio	Kcc		0,47	0,59	0,69	1,29	0,34	0,39	0,47	0,59
Time Constants	Td'		0,062							
	Td"		0,014							
	Tdo'		1,20							
	α		0,028							
Short Circuit Current Capacity		%	>300				>350			
Excitation at no load		Amp.	0,5	0,6	0,7	1	0,3	0,4	0,45	0,6
Excitation at full load		Amp.	2	2	2,5	2,9	1,7	1,8	1,9	2,1
Overload (long-term)		%	1 hour in a 6 hours period 110% rated load							
Overload per 20 sec.		%	300							
Stator Winding Resistance (20°C)		Ω	0,041							
Rotor Winding Resistance (20°C)		Ω	2,861							
Exciter Resistance (20 °C)		Ω	Rotor : 0,442				Stator : 11,35			
Heat dissipation at f.l.cl.H		W	5538	5476	5662	4932	4323	4539	4756	4686
Telephone Interference			THF < 2%				TIF < 45			
Radio interference			EN61000-6-3, EN61000-6-1. For others standards apply to factory							
Waveform Distors.(THD) at f. load		LL/LN %	3,8 / 3,6							
Waveform Distors.(THD) at no load		LL/LN %	3 / 2,9							

Mechanical characteristics		
Protection		IP 21 (other protection on request)
DE bearing		6312-2RS
NDE bearing		6309-2RS
Weight of wound stator assembly	kg	95
Weight of wound rotor assembly	kg	64,5
Weight of complete generator	kg	282
Maximun overspeed	rpm	2250
Unbalanced magnetic pull at f.l.cl.F	kN/mm	4,7

WPS60/ WPS60S

Control System
PLC-920 (Optional)

PowerLink 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℃ to 70℃
- 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	●	●
		Remote start input active LED	×	●
		Alarm reset	●	●
Measurement and Instrumentation	Engine	Oil pressure	●	●
		Water Temperture	●	●
		Engine Speed	●	●
		Hours Run	●	●
		Number of Starts	●	●
		Battery Voltage	●	●
		Coolant Temperature	●	●
	Alternator	3PhaseL-L Voltage&Frequency	●	●
		3phase Current	●	●
		Frequency	●	●
		kWh	●	●
		Apparent Power	●	●
		Active Power and Reactive Power	●	●
		Power Factor	●	●
		Per PhasekW, kWr	●	●
		Per Phase kVA	●	●
		Phase Voltage	●	●
		Output Power	×	●
	Mains Expression	Grid Line Voltage	×	●
		Grid Phase Voltage	×	●
		Grid Frequency	×	●
Shutdown Protection and Indication	Engine	Low Fuel Level	●	●
		High Fuel Level	×	○
		Low Oil Pressure	●	●
		High Water Temperature	●	●
		Failure to Stop	●	●
		Failure to Start	●	●
		Controlable start circles/times	×	●
		Overspeed	●	●
	Alternator	Under&Over Voltage	●	●
		Under&Over Frequency	●	●
		Overcurrent	●	●
		Earth Leakage	○	○
		Reverse Power	×	×
		Reverse kWr	×	×
Threshold Warning&Indication		Low Oil Pressure	●	●
		Low Water Temperature	○	○
		High Water Temperature	●	●
		Low Water Level	●	●
		Low/High Battery Voltage	●	●
		Failure to Charge	●	●
		Overcurrent	●	●
		Overload	●	●
		Genset Under/Over Voltage	●	●
		Genset Under/Over Frequency	●	●
		under/over Speed	●	●
		High Engine Temperature	●	●
		Earth Leakage	○	●
Paralleling Capability		Synchroscope(Independent Bus)	×	×
		Active and Reactive Power Control	×	×
		Synchroscope(Shared Bus)	×	×
		Synchronization Dector	×	×
		Peak Lopping	×	×
Power Transfer Function		Automatic Transfer	○	●
		Hard Closed Transition	●	●
		Soft Closed Transtion	×	×
		Gen/Mains Breaker	×	●
		Gen/Mains Breaker Status Protection	×	●
		Speed/Voltage Control	×	×
		Power Indication	×	●
		Fuel&solenoid Valve Control	●	●
		Startor Control	●	●
		Preheating	○	○
		Mains Transfer Switch (Standard)	×	●
		Mains Transfer Switch (Emergency)	×	●
Environment		Operating Temperature (-40℃-70℃)	●	●
		Ambient Temperature (-25℃-45℃)	●	●
		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	●	●
		Altemator Output Instrument Monitoring	●	●
		Connection Point with All-around Setting For 6 Users	●	●
		3 Users Input Connection Point	●	●
		LCD Light Control of Low Light Operation Environment	●	●
		Safe PIN Code	●	●
		RS232/485 Interface	×	●
		Language Selection Multi-Language Function	●	●

● Standard ○ Optional × Impossible

EP Series

WPS60 / WPS60S

Control System

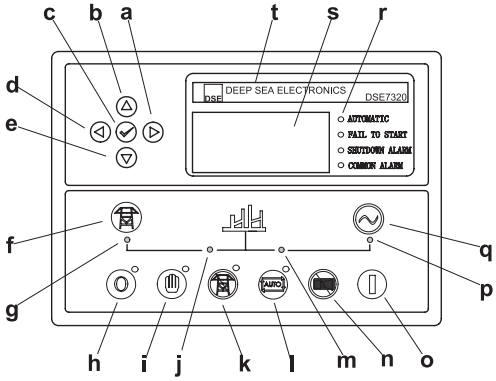
Digital, intelligent control system allows easier operation.

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 automaticallyshut 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
• Water Jacket Preheater • Oil Preheater	• Winding Temperature Measuring Instrument • Alternator Preheater • PMG • Anti-damp and anti-corrosion treatment • Anti-condensation heater	• Tools with the machine	• Low fuel level alarm • Automatic fuel feeding system • Fuel T-valves	• Trailer

Lubricating System	Exhaust System	Cooling System	Control Panel	Voltages
• Oil with the machine	• Protection board from hotness	• Front heat protection • Coolant (-30°C)	• Remote control panel • PLC-920 • PLC-7420 • ATS	• 415/240V • 400/230V • 380/220V • 220/127V • 200-115V

The following lists are optional by the needs of customers.

Engine Model: 1103A-33TG2

Minor Repair / 1000 hrs optional

No.	Part Name	Part No.	Qty	Remark
1	Fuel Filter	26560163	6	
2	Oil Filter	2654403	6	
3	Air Filter	26510337	5	
4	BELT	2614B655	1	
5	SEAL - ROCKER BOX COVER	3681A057	1	
6	GASKET - CYLINDER HEAD	3681E049	1	
7	THERMOSTAT	4133L507	1	
8	FRONT OIL SEAL	2418F437	1	
9	SEAL - REAR END OIL	2418F704	1	