

Standard Basic Module -Open Type

- Highly efficient gas engine
- AC synchronous alternator
- Gas safety train
- Cooling system suitable for ambient temperature up to 50°C
- Advanced engine control system, including: ignition system, detonation control system, speed control system, air/fuel ratio control system
- Strict shop test for all gensets
- Expansion tank and water jacket heater
- Industrial silencer with silencing ability of 12-20dB(A)
- Unattached switch cabinet and electric control cabinet
- Multi-functional control system with simple operation
- Data communication interfaces integrated into control system
- Monitoring battery voltage and charging automatically
- Auto refilling oil system
- Bus interface for connecting to higher level control unit



Structure and control cabinet

Structure type	Open type
Canopy painting	High-class powder coating
Electrical control cabinet	Integrated, IP54
Noise level @ 1m, dB(A)	100.1
@ 7m, dB(A)	91.4
@ 10m, dB(A)	87.2

Dimension and weight

Dimension (LxWxH) , mm	4300x1300x2000
Weight, kg	4300

Special statement :

- 1、 The technical data are based on a gas mixture of 50% methane and 50% carbon dioxide with a calorific value of 6,0 kWh/Nm³ and a methane no. > 100
- 2、 The technical data is measured in standard conditions:
Absolute atmospheric pressure: 100kPa
Ambient temperature : 25°C
Relative air humidity : 30%
- 3、 Rating adaptation at ambient conditions acc to DIN ISO 3046/1.
The tolerance for the specific fuel consumption is + 5 % at rated output.
- 4、 Technical data above are just for standard product ,and may be subject to change. As this document is used only for presale reference, take the specification supplied by PowerLink before ordering as final.

Electric data @50Hz

Voltage-V	Power-kW	Efficiency-%	Current-A
380	220	40.2	418
400	220	40.2	397
415	220	40.2	383
440	220	40.2	361

Fuel and emission

Fuel type	Biogas
Fuel composition	50%-CH ₄ /50%-CO ₂
Methane number	MN > 100
Excess air factor (Lambda)	1.57
Fuel consumption @ 100% load, m ³ /h	91
Supply gas pressure range, kPa	10~20
Emission without catalytic converter	
NO _x , mg/Nm ³	≤500
CO , mg/Nm ³	≤1000
HCHO (formaldehyde) , mg/Nm ³	≤60
NMHC , mg/Nm ³	≤150
Emission with catalytic converter(optional)	
NO _x , mg/Nm ³	≤250 mg/Nm ³

GE220-BG

Biogas Genset

Standard Basic Module + Acoustic Attenuated Canopy (Optional)



Dimension and Noise Level

Canopy Size	4570*1410*2440mm
Noise Level@ 1m , dB(A)	79.3
@ 7m , dB(A)	72.4
@ 10m , dB(A)	68.3

- Modular designed and manufactured for plug and play Environmental friendly low emission
- Small indoor space required for installation Low noise does not affect the surrounding environment



GE220-BG

Biogas Genset

Standard Basic Module + Acoustic Attenuated Container (Optional)



Dimension and Noise Level

Optional container (mm) (customized container modeling service available)	<input type="checkbox"/>	7000*2300*2500
	<input type="checkbox"/>	6058*2438*2591
	<input type="checkbox"/>	12192*2438*2896
	<input type="checkbox"/>	12192*3000*2896
	<input type="checkbox"/>	13500*3000*2896
	<input type="checkbox"/>	15000*3200*3000
Noise Level@ 1m , dB(A)		77
@ 7m , dB(A)		70
@ 10m , dB(A)		66

- Outdoor application enabled, weatherproof and dustproof, corrosion preventive Environmental friendly low emission
- Modular designed and manufactured for plug and play Low noise does not affect the surrounding environment



Genset performance data and manufacturing technology

Genset model	GE220-BG	Telephone interference factor(TIF)	≤50
Electrical output power (kW)	220	Telephone harmonious factor(THF)	≤2% , as per BS4999
Genset electrical efficiency	40.2%	<p>Manufacturing technology</p> <ul style="list-style-type: none"> ● Special welded base frame, inner vibration isolators and design for whole lifting ● With high-class paint, enduring brightness as well resistance against abrasion and defacing ● Installation manual, operation and maintenance manual wiring program <p>Standards and certificate</p> <ul style="list-style-type: none"> ● ISO3046 , ISO8528 , GB2820 ● BS5000PT99 , AS1359 , IEC34 ● ISO9001:2008 quality system certification 	
Overload runtime at 1.1xSe(hour)	1		
Steady-state voltage deviation	≤±1%		
Transient-state voltage deviation	-15%~20%		
Voltage recovery time(s)	≤4		
Voltage unbalance	1%		
Steady-state frequency regulation	±0.5%		
Transient -state frequency regulation	±5%		
Frequency recovery time(s)	≤3		
Steady-state frequency band	0.5%		
Recovery time response(s)	0.5		

AC alternator performance data

Alternator brand	Leroy-Somer	Voltage	Power
Alternator model	LSA46.3L10	380V	252 kW
Rated output power (kW)	252	400V	252 kW
Power factor	0.8	415V	252 kW
Rated current @ 400V and 100% load (A)	455	440V	252 kW
Excitation system	Brushless		
THF (BS EN60034- 1)	<2%		
Bearing number	2		
Winding material	100% copper		
Wiring connection	Star		
Rotor insulation class	H		
Winding pitch	2/3		
A.V.R. model	R450		
Voltage fluctuation(no load to full load)	± 0.5%		
Housing protection	IP23		
TIF (NEMA MG 1-22)	<50		
Excitation method	AREP		
Rated ambient temperature(°C)	40		
Rated stator temperature rise(°C)	125		

Efficient gas engine

General data

NO. of cylinders		6
Engine type		4-stroke, turbo charged and air to water cooled, lean burn
Cylinder arrangement		In line
Bore x stroke	mm	128x166
Displacement	L	13.82
Compression ratio		11: 1
Rated speed	rpm	1500
Rated output power	kW	252
Excess air factor		1.57
Rotation direction		Anti-clockwise viewed on flywheel
Ignition timing	°BTDC	20

Cooling system

Coolant refilling capacity	L	16
Max. jacket water operating pressure	kPa	250
Min. jacket water circulation flow	L/min	350
Min. jacket water temperature	°C	80
Max. jacket water temperature	°C	88
Max. jacket water difference(inlet-outlet)	K	6
Min. circulation flow LT	L/min	84
Min. circulation flow HT	L/min	100
Coolant type		Mixture of 40 % antifreeze and 60% clean fresh water. Lower ambient temperature, higher content of antifreeze.

Induction/exhaust system

Exhaust flow(wet)	kg/h	1221
Combustion air flow	kg/h	1050
Exhaust temperature	°C	478
Max. exhaust back pressure	mbar	40
Max. suction restriction	mbar	15

Fuel consumption

100% load	m³/h	91
75% load	m³/h	68
50% load	m³/h	47

Fuel: Special Gas - LHV = 21.6 MJ/m³

Lubrication system

Max. refilling capacity	L	53
Min. refilling capacity	L	30
Max. consumption	kg/h	0.16
Lubrication oil pump		Gear driven

Fuel control system

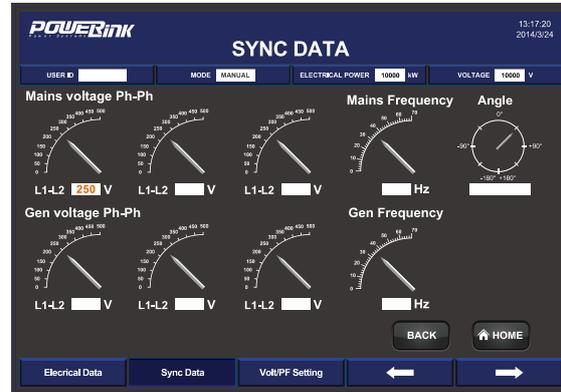
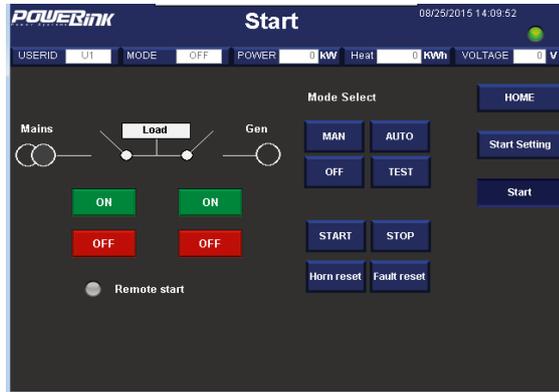
Gas train, Including:	ball valves
	filters
	gas pressure gauge
	safety solenoid valves
	constant pressure regulator etc
	gas pressure relief valve

Ignition system

Ignition type	Electronic ignition system
Polarity	Negative earth
Spark plug	Separate for every cylinder

PCC-300 control system

Open control system is adopted with touch screen display , and various functions, including: engine protection and control, paralleling between gensets or gensets and mains, and CHP control functions,as wellas communication functions, etc.



Main functions

- Engine monitor : coolant, lubrication, exhaust, battery
- Supply gas circuit monitor: pressure,temperature and CH4 content
- Auto paralleling and load share
- Voltage and PF control
- Alternator data : U, I, Hz, kW, kVA, kVAr, PF, kWh, kVAh
- Mains data: U, I, Hz, kW, kVAr, PF
- Modbus communicationprotocol based on RS232 and RS485 interfaces
- SMS message
- Internet connection and USB 2.0 interface
- 10-inch touch screen
- Internet monitor, auto orientation and cloud communication
- 1000 history events log

Advantages

- Accordant with consumer requirement
- Complete control project
- Convenient remote monitor and service
- Simplified engine start/stop control
- Enhanced stability and safety

Standard protection functions

- Alternator protection**
- 2xReverse power
 - 2xOverload
 - 4xOvercurrent
 - 1xOvervoltage
 - 1xUndervoltage
 - 1xOver/underfrequency
 - 1xUnbalanced current
- Busbar/mains protection**
- 1xOvervoltage
 - 1xUndervoltage
 - 1xOver/under frequency
 - 1xPhase sequence
 - 1xROCOF alarm

Standard control functions

- Powercontrol**
- RPM control(synchronization)
 - Power control(grid connection)
 - Load share(island)
- Lubrication control**
- Auto refilling
 - Warning and monitoring
- Fan control**
- Ventilation for engine room
 - Radiator fan
 - Emergency radiator fan
- Engine protection**
- Various routine and customized protection functions
 - Monitoring
- Voltage control**
- Voltage tracking (synchronization)
 - Voltage control(island)
 - PF control(grid connection)
 - Reactive power share (island)
- Pump control**
- Cooling system
 - Emergency radiator
- Valve control**
- Cooling system
 - Heating system
 - Emergency radiator

Standard configuration

Engine	Alternator	Canopy and base	Electrical cabinet
Gas engine Ignition system Lambda controller Electronic governor actuator Electrical start motor Battery system Auto charging system Detonation control system Coupling	AREP AC alternator H class insulation IP23 protection AVR voltage regulator PF control	Steel monocoque base frame Engine bracket Vibration isolators Alternator base	Air circuitbreaker Paralleling control system 10-inch touch screen Communication interfaces Electrical switch cabinet
Gas supply system	Lubrication system	Standard voltage	Induction/ exhaust system
Gas safety train Air/fuel mixer	Oil filter Daily auxiliary oil tank Auto refilling oil system New and used oil tank (Only applicable to container, two inch with the daily oil tank)	380/220V 400/230V 415/240V 440/254V	Air filter Exhaust silencer Exhaust bellows Gas leakage protection (Only applicable to canopy and container)
Cooling system	Service and documents		
Jacket water circulation pump Mixture circulation pump Intercoolerradiator Jacket water constant temp. valve Intercooler water constant temp. valve Expansion tank	Tools package Installation and operation manual Maintenance manual Software manual Parts manual	Engine operation and maintenance manual Gas quality specification Control system manual After service guide Standard package	

Optional configuration

Engine	Alternator	Service and documents	Lubrication system	Voltage
Heavy duty air filter Backfire safety control valve Jacket water heater	Space heater Treatments against humidity and corrosion	Service tools Maintenance and service parts	Oil consumption gauge	220V 230V 240V
Canopy and base	Exhaust system	Electrical system	Gas supply system	
SECC base frame	Guard shield from touch Residential silencer Three-way catalytic converter		Gas flow gauge Refrigerated gas drier Gas compressor	Emergency relief flare Free water separator Gas purification plant