

### 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)	91
@ 7m, dB(A)	87
@ 10m, dB(A)	84.7

#### Dimension and weight

Dimension ( LxWxH ) , mm	3300X1150X1750
Weight, kg	2100

#### Special statement :

- 1、 The technical data are based on a gas mixture of 60% methane and 40% carbon dioxide with a calorific value of 6,0 kWh/Nm<sup>3</sup> 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	100	36.5	190
400	100	36.5	180
415	100	36.5	174
440	100	36.5	164

#### Fuel and emission

Fuel type	Biogas
Fuel composition	60%-CH <sub>4</sub> /40%-CO <sub>2</sub>
Methane number	MN > 100
Excess air factor ( Lambda )	1.40
Fuel consumption @ 100% load, m <sup>3</sup> /h	46
Supply gas pressure range, kPa	10~20
<b>Emission without catalytic converter</b>	
NO <sub>x</sub> , mg/Nm <sup>3</sup>	≤500
CO , mg/Nm <sup>3</sup>	≤600
HCHO ( formaldehyde ) , mg/Nm <sup>3</sup>	≤60
NMHC , mg/Nm <sup>3</sup>	≤150
<b>Emission with catalytic converter(optional)</b>	
NO <sub>x</sub> , mg/Nm <sup>3</sup>	≤250 mg/Nm <sup>3</sup>

# GE100-BG

Biogas Genset

## Standard Basic Module + Acoustic Attenuated Canopy (Optional)



### Dimension and Noise Level

Canopy Size	3500*1150*1750mm
Noise Level@ 1m , dB(A)	78.21
@ 7m , dB(A)	67.9
@ 10m , dB(A)	63.5

- 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



# GE100-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)		76
@ 7m , dB(A)		65
@ 10m , dB(A)		61

- 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	GE100-BG	Telephone interference factor(TIF)	≤50
Electrical output power (kW)	100	Telephone harmonious factor(THF)	≤2% , as per BS4999
Genset electrical efficiency	36.5 %	<p><b>Manufacturing technology</b></p> <ul style="list-style-type: none"> <li>● Specialwelded base frame, inner vibration isolators and design for whole lifting</li> <li>● With high-class paint, enduring brightness as well resistance against abrasion and defacing</li> <li>● Installation manual, operation and maintenance manual wiring program</li> </ul> <p><b>Standards and certificate</b></p> <ul style="list-style-type: none"> <li>● ISO3046 , ISO8528 , GB2820</li> <li>● BS5000PT99 , AS1359 , IEC34</li> <li>● ISO9001:2008 quality system certification</li> </ul>	
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 alternatorperformance data

Alternator brand	Leroy-Somer	Voltage	Power
Alternator model	LSA44.3L10	380V	120 kW
Rated output power (kW)	120	400V	120 kW
Power factor	0.8	415V	120 kW
Rated current @ 400V and 100% load (A)	217	440V	108 kW
Excitation system	Brushless		
THF (BS EN60034- 1)	<2%		
Bearing number	1		
Winding material	100% copper		
Wiring connection	Star		
Rotor insulation class	H		
Winding pitch	2/3		
A.V.R. model	R438		
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		4
Engine type		4-stroke,turbo charged and air to water cooled, lean burn
Cylinder arrangement		In line
Bore x stroke	mm	108x125
Displacement	L	6.87
Compression ratio		11 : 1
Rated speed	rpm	1500
Rated output power	kW	110
Excess air factor		1.40
Rotation direction		Anti-clockwise viewed on flywheel
Ignition timing	°BTDC	16

#### Cooling system

Coolant refilling capacity	L	16
Max. jacket water operating pressure	kPa	200
Min. jacket water circulation flow	L/min	221
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	32
Min. circulation flow HT	L/min	43
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	525
Combustion air flow	kg/h	470
Exhaust temperature	°C	410
Max. exhaust back pressure	mbar	40
Max. suction restriction	mbar	15

#### Fuel consumption

100% load	m³/h	46
75% load	m³/h	35
50% load	m³/h	25

Fuel: Special Gas - LHV = 21.6 MJ/m³

#### Lubrication system

Max. refilling capacity	L	34
Min. refilling capacity	L	24
Max. consumption	kg/h	0.125
Lubrication oil pump		Gear driven

#### Fuel control system

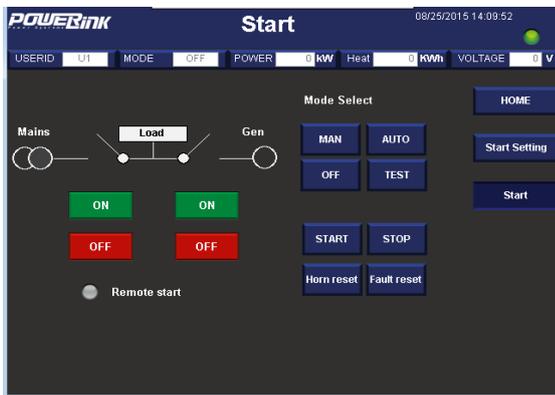
Gas train, Including:	ball valves
	filters
	gas pressure gauge
	safety solenoid valves
	constant pressure regulator etc
	gas pressure relief valve

#### Ignition system

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

### PCC-300 control system

Programmable control system is adopted with touch screen display , and various functions, including: engine protection and control, CHP parallel and grid connection, 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, kVA<sub>r</sub>, PF, kWh, kVAh
- Griddata: U, I, Hz, kW, kVA<sub>r</sub>, 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 solution
- 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/ Gridprotection**
- 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	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 constanttemp. 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