

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 and cylinder temp. protection 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
Container painting	High-class paint
Electrical control cabinet	Integrated, IP54
Noise level @ 1m, dB(A)	107.8
@ 7m, dB(A)	92.1
@ 10m, dB(A)	85.8

Electric data @50Hz

Voltage-V	Power-kW	Efficiency-%	Current-A
380	1000	38.7	1899
400	1000	38.7	1804
415	1000	38.7	1739
440	1000	38.7	1640

Dimension and weight

Dimension (LxWxH), mm	7000X2000X2200
Weight, kg	17000

Special statement :

- The technical data are based on a gas mixture of 60% methane and 40% carbon dioxide with a calorific value of 6,0 kWh/Nm³ and a methane no. > 100
- The technical data is measured in standard conditions:
Absolute atmospheric pressure: 100kPa
Ambient temperature : 25°C
Relative air humidity : 30%
- Rating adaptation at ambient conditions acc to DIN ISO 3046/1.
The tolerance for the specific fuel consumption is + 5 % at rated output.
- 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.

Fuel and emission

Fuel type	Biogas
Fuel composition	60%-CH ₄ /40%-CO ₂
Methane number	MN > 100
Excess air factor (Lambda)	1.7
Fuel consumption @ 100% load, m ³ /h	431
Supply gas pressure range, kPa	20~25
Emission without catalytic converter	
NO _x , mg/Nm ³	≤480
CO , mg/Nm ³	≤870
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

GE1000-BG

Biogas Genset

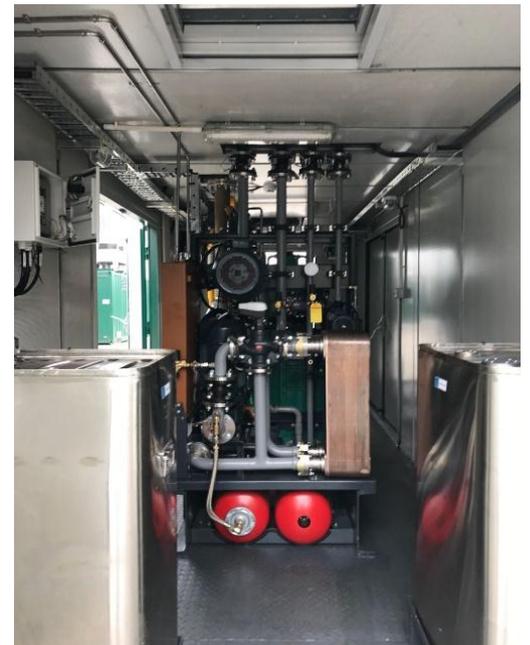
Standard Basic Module + Acoustic Attenuated Container (Optional)



Dimension and Noise Level

Optional container (mm) (customized container modeling service available)	<input type="checkbox"/>	12192*2438*2896
	<input type="checkbox"/>	12192*3000*2896
	<input type="checkbox"/>	13500*3000*2896
	<input type="checkbox"/>	15000*3200*3000
	<input type="checkbox"/>	17000*3200*3000
Noise Level@ 1m , dB(A)	86	
@ 7m , dB(A)	75	
@ 10m , dB(A)	70	

- 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	GE1000-BG	Telephone interference factor(TIF)	≤50
Electrical output power (kW)	1000	Telephone harmonious factor(THF)	≤2% , as per BS4999
Genset electrical efficiency	38.7%	<p>Manufacturing technology</p> <ul style="list-style-type: none"> ● Specialwelded 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	LSA50.2L8	380V	1200 kW
Rated output power (kW)	1200	400V	1200 kW
Power factor	0.8	415V	1200 kW
Rated current @ 400V and 100% load (A)	2165	440V	1100 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		16
Engine type	4-stroke, turbo charged and air to water cooled, lean burn	
Cylinder arrangement	V-form , 60°	
Bore x stroke	mm	160x190
Displacement	L	61.123
Compression ratio		12 : 1
Rated speed	rpm	1500
Rated output power	kW	1042
Excess air factor		1.7
Rotation direction	Anti-clockwise viewed on flywheel	
Ignition timing	°BTDC	26

Induction/exhaust system

Exhaust flow	m³/h	12632
Max. exhaust temp. before turbo	°C	600
Max. exhaust temp. after turbo	°C	468
Max. exhaust back pressure	mmH ₂ O	400
Max. suction restriction	mmH ₂ O	380
Exhaust outlet flange size	mm	2x152

Lubrication system

Total capacity	L	286
Sump maximum	L	257
Sump minimum	L	147
Oil temperature	°C	88
Oil pressure at rated speed	kPa	470
Oil flow - 1500rpm	L/min	402
Max. consumption	g/kWhr	0.25
Oil type	Single grade	
Oil pump	Gear driven	

Ignition system

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

Cooling system

Total coolant capacity	L	95
Jacket water pressure in crankcase	kPa	≤100
Total coolant flow	L/min	950
Max. coolant exit temperature	°C	96
Max. coolant entry temperature	°C	81
Charge coolant flow	L/min	600
Charge coolant exit temperature	°C	40
Charge coolant entry temperature	°C	36
Coolant type	Mixture of 50% Inhibited ethylene glycol or propyleneglycol and 50% clean fresh water. Lower ambient temp, higher content of antifreez.	

Fuel consumption

100% load	m³/h	431
75% load	m³/h	327
50% load	m³/h	220

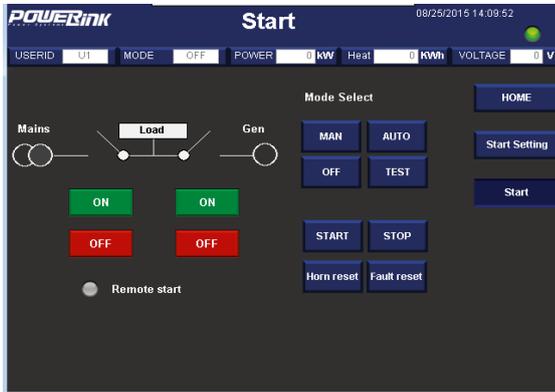
Fuel: Special Gas - LHV =21.6 MJ/m³

Fuel control system

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

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 communication protocol 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	Standard control functions	
Alternator protection <ul style="list-style-type: none"> - 2xReverse power - 2xOverload - 4xOvercurrent - 1xOvervoltage - 1xUndervoltage - 1xOver/underfrequency - 1xUnbalanced current 	Powercontrol <ul style="list-style-type: none"> - RPM control(synchronization) - Power control(grid connection) - Load share(island) 	Voltage control <ul style="list-style-type: none"> - Voltage tracking (synchronization) - Voltage control(island) - PF control(grid connection) - Reactive power share (island)
	Lubrication control <ul style="list-style-type: none"> - Auto refilling - Warning and monitoring 	Pump control <ul style="list-style-type: none"> - Cooling system - Emergency radiator
Busbar/mains protection <ul style="list-style-type: none"> - 1xOvervoltage - 1xUndervoltage - 1xOver/under frequency - 1xPhase sequence - 1xROCOF alarm 	Fan control <ul style="list-style-type: none"> - Ventilation for engine room - Radiator fan - Emergency radiator fan 	Valve control <ul style="list-style-type: none"> - Cooling system - Heating system - Emergency radiator
	Engine protection <ul style="list-style-type: none"> - Various routine and customized protection functions - Monitoring 	

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 Cylinder temp. protection 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 radiator 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	Exhaust system
Heavy duty air filter Backfire safety control valve Jacket water heater	Space heater Treatments against humidity and corrosion	Guard shield from touch Residential silencer Three-way catalytic converter
Canopy and base	Lubrication system	Service and documents
SECC base frame	Oil consumption gauge	Service tools Maintenance and service parts
Gas supply system		Voltage
Gas flow gauge Refrigerated gas drier Gas compressor	Emergency relief flare Free water separator Gas purification plant	220V 230V240V