

# ACG10S-NG

## Natural Gas MCHP Unit

### Main configuration and features:

- Highly efficient gas engine
- Water-cooled AC asynchronous alternator
- Gas train
- Exhaust/water heat exchanger
- Water/water heat exchanger
- Heating circulation system
- Advanced engine control system, including: ignition system, detonation control system ,speed control system , air/fuel ratio control system
- Control cabinet and switch cabinet
- Multi-functional control system with simple operation
- Data communication interfaces integrated into control system
- Battery charger
- Daily oil tank
- Silencer
- Connecting to the grid mode



### Structure and Control Cabinet

Structure Type	Soundproof canopy
Spraying Process	High quality powder coating
Electrical control cabinet	Integrated into canopy,IP54
Noise level@7m, dB(A)	< 53

#### Special statement :

- 1、 The technical data is based on natural gas with a lower calorific value of 36MJ/Nm<sup>3</sup>.The technical data indicated is based on standard conditions according to ISO8528/1, ISO3046/1 and BS5514/1.
- 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、 Dimension and weight 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

Gas medium	Natural gas
Methane number	MN > 80
NO <sub>x</sub> , mg/Nm <sup>3</sup>	<307
NMHC , mg/Nm <sup>3</sup>	<116
Supply gas pressure range (gage pressure), kPa	10~20

### Dimension and Weight

Dimension ( LxWxH ) , mm	1050x655x920
Weight, kg	580

### CHP Unit performance data and manufacturing technology

Model	ACG10S-NG	<b>Manufacturing technology</b> <ul style="list-style-type: none"> <li>● Special welded base frame, inner vibration isolators and design for whole lifting</li> <li>● With high quality paint, enduring brightness as well resistance against abrasion and defacing</li> <li>● Installation manual, operation and maintenance manual circuit diagram</li> </ul> <b>Standards and certificate</b> <ul style="list-style-type: none"> <li>● ISO3046 , ISO8528 , GB2820</li> <li>● BS5000PT99 , AS1359 , IEC34</li> <li>● ISO9001:2008 quality system certification</li> </ul>
Electric output power ( kWe ) @100% load	10	
Thermal output power (kWt) @100% load	20	
Gas Input (kW) @100% load	31.0	
Electric efficiency@100% load	29.0%	
Thermal efficiency@100% load	63.0%	
Total efficiency@100% load	92.0%	
Heating water temp. outlet(°C)	90~95	
Heating water temp. return(°C)	82-87	

### Gas engine

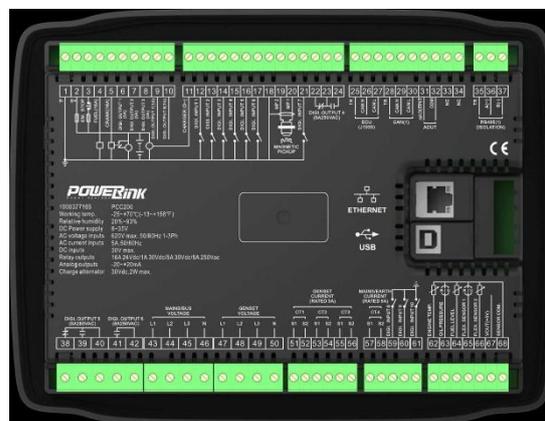
Brand	Powerlink	<b>Energy balance and gas flow</b>	
Model	1K	Mechanical power @100%Load (kW)	16
Speed (rpm)	1500	Coolant heat @100%Load (kW)	7.5
NO. of cylinders	3(in-line)	Exhaust heat @100%Load (kW)	13.2
Bore x Stroke (mm)	72x78	Max. radiation heat (kW)	0.8
Displacement (L)	0.953	Combustion air flow @100%Load (kg/h)	186
Cooling system	Water cooled	Exhaust gas flow @100%Load (kg/h)	328
Intake system	Natural aspirated	Rated Exhaust temperature @100%Load (°C)	83
Lube oil consumption (kg/h)	0.002	Gas consumption (m <sup>3</sup> /h) @ 100% load	3.1
Battery voltage(V)	12	75% load	2.3
Coolant type	Glycol mixture	50% load	1.6

### AC alternator

Brand	Powerlink	Cooling mode	Water
Model	AS10	Rotor insulation class	H
Rated output power @400V/50Hz (kW)	18	Winding pitch	2/3
Power factor	0.78	Voltage fluctuation(no load to full load)	± 0.5%
Rated current @400V/50Hz (A)	33	Drip proof	IP23
THF (BS EN60034- 1)	<2%	Excitation method	Brushless
TIF (NEMA MG 1-22)	<50	Rated ambient temperature(°C)	40
Winding material	100% copper	Rated stator temperature rise(°C)	125

### PCC-200 control system

Programmable control system has multiple functions, including: engine protection and control, connecting CHP to the grid, and CHP control functions, as well as communication functions, etc.



#### Main functions

- Engine monitor : coolant, lubrication, exhaust, battery
- Auto connecting to the grid and load share
- Voltage and PF control
- Alternator data : U, I, Hz, kW, kVA, kVAr, PF, kWh, kVAh
- Grid data: U, I, Hz, kW, kVAr, PF
- Display thermal power
- Modbus communication protocol based on RS232 and RS485 interfaces
- SMS message
- Internet connection and USB interface
- LED display 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/under frequency
  - 1xUnbalanced current
- Busbar/Grid protection**
- 1xOvervoltage
  - 1xUndervoltage
  - 1xOver/under frequency
  - 1xPhase sequence
  - 1xROCOF alarm

#### Standard control functions

- Power control**
- RPM control
  - Power control(grid connection)
  - Load share
- Lubrication control**
- Warning
  - Monitoring
- Engine protection**
- Various routine and customized protection functions
  - Monitoring
- 
- Voltage control**
- Voltage tracking
  - Voltage control
  - PF control(grid connection)
  - Reactive power share
- Pump control**
- Cooling system
- Valve control**
- Cooling system
  - Heating system

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## Standard configuration

Engine	Alternator	Canopy and base	Electrical cabinet
Gas engine Ignition system Lambda controller Speed control system Electrical start motor Battery system Lockable isolator switch	AC asynchronous alternator Water-cooled type H class insulation IP23 protection	Steel monocoque base frame Engine bracket Vibration isolators Soundproof canopy	Main circuit breaker Display screen Mains floating charger Thermal overload relay Communication interface
Gas supply system	Lubrication system	Standard voltage	Induction/ exhaust system
Gas train Air/fuel mixer Throttle valve	Oil filter Daily oil tank	380/220V 400/230V 415/240V 440/254V	Air filter Exhaust silencer Exhaust bellows
Heat exchange system	Service and documents		
Exhaust / water heat exchanger Jacket water heat exchanger Expansion tank Three-way valve Circulation pump	Tools package Installation and operation manual Maintenance manual Software manual Parts manual	Engine operation and maintenance manual Gas quality declaration Control system manual After service guide Standard package	

## Optional configuration

Engine/Alternator	Electrical system	Gas supply system
Treatments against humidity and corrosion	RCD Thermal power gauge Electric power gauge	Gas flow gauge
Voltage	Exhaust system	Oil tanks
220V 230V 240V	Three-way catalytic converter	Clean and waste oil tanks