Overview

The LNGC series of hydraulic grid-connected inverters are core power electronic devices that connect hydraulic generators to the power grid, undertaking the critical tasks of energy conversion, control, and grid adaptation. Their core function is to convert the non-standard frequency and unstable electrical energy output from the hydraulic generator into high-quality AC power synchronized with the grid frequency and voltage, while simultaneously optimizing power and suppressing harmonics, ensuring the efficient and safe grid-connected operation of the hydraulic power generation system. The hydraulic grid-connected inverter utilizes a fully digital DSP control scheme, coupled with a touchscreen and remote monitoring interfaces (RS485/WiFi/G-PRS), enabling parameter setting, power curve adjustment, and multi-terminal data interaction. It incorporates a built-in DC voltage regulation circuit with boost modulation capabilities. The AC voltage generated by the hydraulic generator is first rectified by a rectifier circuit and then regulated by the voltage regulation circuit before reaching the DC bus. The inverter control circuit then chops the DC bus voltage into a pulse sequence with varying pulse widths. A filtering circuit filters and shapes the signal to remove high-frequency harmonics, resulting in a smooth sinusoidal AC output. Grid synchronization (PLL) technology is used to real-time detect the grid voltage phase and frequency, ensuring that the inverter output is synchronized with the grid.

The hydraulic grid-connected inverter employs MPPT (Maximum Power Point Tracking) technology as a key control strategy. By dynamically adjusting the inverter output current, the inverter can output maximum power under different rotational speeds of the hydraulic generator.

The features of the hydraulic grid-connected inverter include efficient power conversion, high reliability, a wide input voltage range, precise synchronization with the power grid, comprehensive protection functions, advanced control technology, and optimized power quality. These features ensure the stable operation and efficient energy conversion of the hydraulic power generation system.

Typical applications: Grid-connected power generation in small and medium-sized hydropower stations, distributed hydraulic power generation systems, and hybrid energy complementary systems.

Technical Features

- High Flexibility: 30 power curve setting points are available, allowing for flexible curve adaptation based on the characteristics of the hydraulic generator.
- High Safety: Industrial frequency design with a built-in isolation transformer at the output, providing electrical isolation between input and output, making it more load-friendly.
- Display and Control: Color touch screen with Chinese and English language switching, integrated display and control, providing clear visibility of operating data.
- Automatic Control: Automatic operation when input and grid conditions are met; automatic disconnection from the grid when grid-connected power is low, reducing power loss.
- Reserved load shedding interface allows for external load shedding in case of abnormal power generation from the hydraulic generator.
- Wide Input Voltage Range: Grid connection starting voltage as low as 100VDC, allowing it to fully follow the generator's power generation curve.

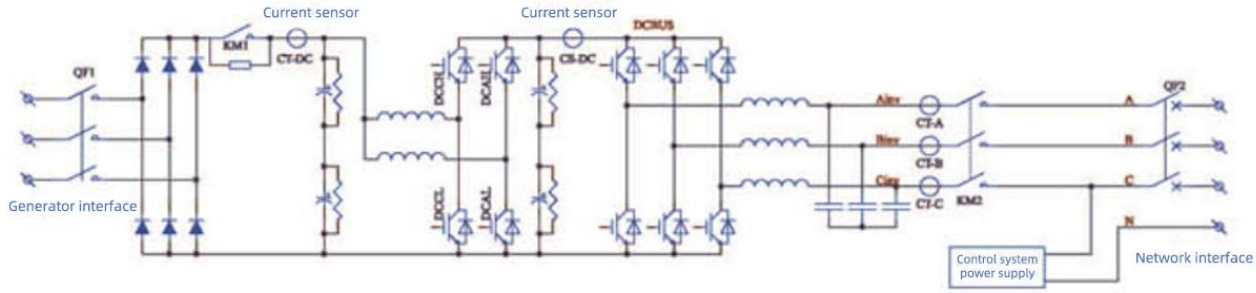
Model and meaning

LNWG-□K□ TL

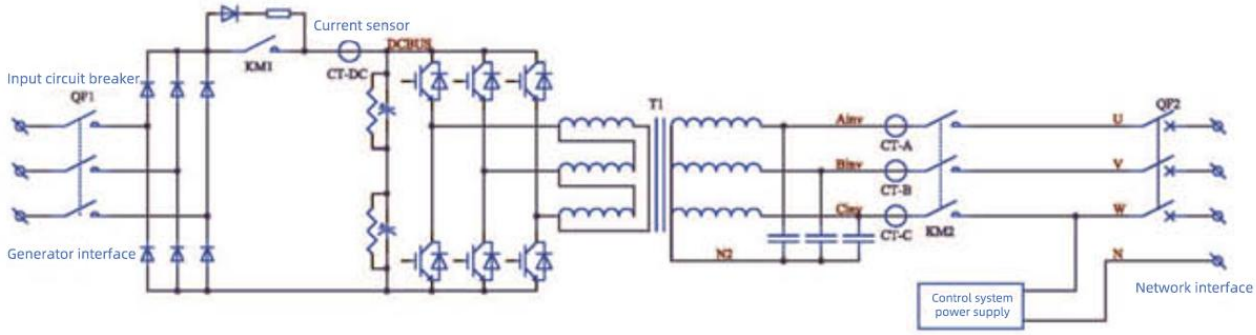
12 3 45 6 78

Number	Number name	Meaning
1	L	Company Code
2	N	Inverter power supply
3	WG	Wind power grid-connected inverter
4	□	Rated power
5	K	Unit: KW
6	□	D: Single-phase output S: Three-phase output
7	T	Power frequency transformer
8	L	Not equipped with a power frequency transformer

Electrical schematic diagram



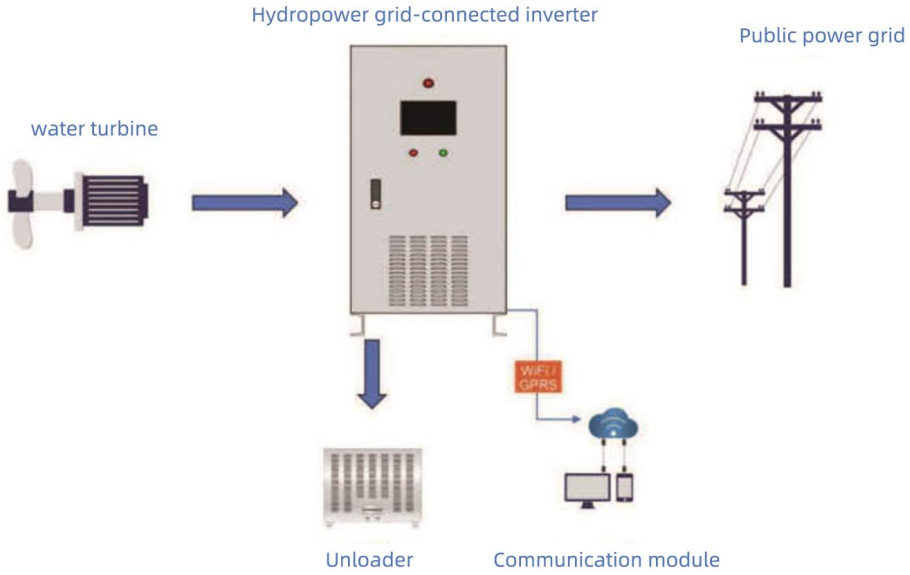
▲ Three-phase high-frequency hydraulic grid-connected inverter



▲ Three-phase power frequency hydraulic grid-connected converter

The three-phase industrial frequency grid-connected hydraulic power converter can be optionally equipped with a load port function, providing high-quality power output (constant voltage, constant frequency) to the load when the grid is unavailable or experiencing abnormalities. The operating logic is as follows: the hydraulic generator, after passing through the converter, directly provides off-grid VF output to the load. When the load is less than the generated power, the excess energy is dissipated by a load dump device.

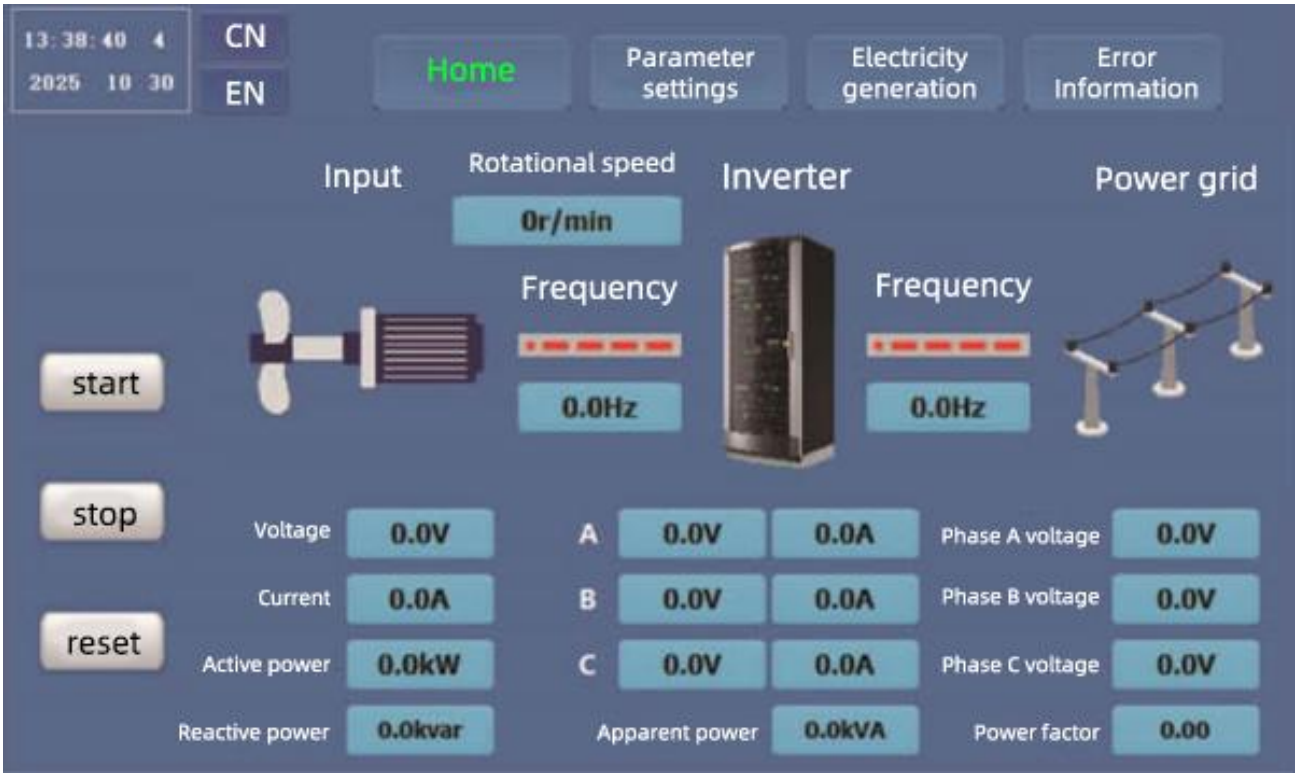
Typical work system topology



The wind energy is converted into alternating current through the wind turbine controller. A grid-connected inverter then converts the electrical energy to a voltage and frequency suitable for the power grid. A portion of this energy is consumed by local loads, and the remaining portion is fed into the power grid. Therefore, the grid-connected inverter is a key component of the wind power generation system.

Operating Interface

Color touch screen, integrated display and control, supports Chinese and English language switching.



Power supply technical specifications

Single-phase hydraulic grid-connected inverter								
Model	LNGC-*KDTL							
Rated Power (KW)	5	10	15	30	50	75	100	200
AC Input Voltage Range	0-350VAC (☆Other voltages available upon request)							
MPPT Voltage Range	100-280VAC (☆Other voltages available upon request)							
Rated Input Current (A)	13.2	26.3	39.4	78.8	131.3	196.9	262.5	524.9
Maximum Input Current (A)	14.5	28.9	43.4	86.7	144.3	216.6	288.7	577.4
Rated AC Output Power (KW)	5	10	15	30	50	75	100	200
Maximum AC Output Power (KW)	5.5	11	16	33	55	82	110	220
Current Harmonic THD	<3% (of rated power)							
Power Factor	≥0.99							
Maximum Efficiency	High frequency 99%; Power frequency 96%							
Rated Output Voltage and Frequency	220VAC 50/60Hz (☆Other voltages and frequencies available upon request)							
Allowable Grid Voltage Range	±15% (☆Other voltages available upon request)							
Allowable Grid Frequency Range	±10% (☆Other frequencies available upon request)							
Standby Power Consumption	<100W							
Automatic Operation Conditions	DC input and grid requirements are met, and the inverter operates automatically.							
Automatic Restart Time After Power Failure	5 minutes (time is adjustable)							
Protection Functions	Reverse polarity, short circuit, islanding, overheating, overload, etc.							
Display Method	Touch screen							

Wind Turbine Power Curve	30 power points can be set
Operating Temperature	-10℃~+50℃ (☆Other temperatures can be customized)
Relative Humidity	0-90% (non-condensing)
Altitude	≤6000m. Derating is required above 2000 meters (1% derating for every 100 meters increase)
Cooling Method	Forced air cooling
Noise	<65dB (at 1m distance)
Protection Class	IP20 (☆Customizable to IP54)
Communication Protocol	Modbus RTU/ Modbus TCP

☆ indicates an optional feature. The technical parameters above are standard parameters and are for reference only; they can be customized according to the user's actual needs.

The current values in the table are calculated based on a standard AC220V three-phase hydroelectric generator.

Three-phase hydraulic power grid-connected converter								
Model	LNGC-*KSTL							
Rated Power (KW)	10	30	50	100	250	500	750	1000
AC Input Voltage Range	0-550Vac (Other voltages available upon request)							
MPPT Voltage Range	250-500Vac (Other voltages available upon request)							
Rated Input Current (A)	15.2	45.6	76	152	379.9	759.7	1139.6	1519.4
Maximum Input Current (A)	16.8	50.2	83.6	167.2	417.9	835.7	1253.5	1671.4
Rated AC Output Power (KW)	10	30	50	100	250	500	750	1000
Maximum AC Output Power (KW)	11	33	55	110	275	550	825	1100
Current Harmonic THD	<3% (of rated power)							
Power Factor	≥0.99							

Maximum Efficiency	High frequency 99%; Power frequency 96%
Rated Output Voltage and Frequency	380V 50/60Hz (☆Other voltages and frequencies available upon request)
Allowable Grid Voltage Range	±15% (☆Other voltages available upon request)
Allowable Grid Frequency Range	±10% (☆Other frequencies available upon request)
Standby Power Consumption	<100W
Automatic Operation Conditions	DC input and grid requirements are met, and the inverter operates automatically.
Automatic Restart Time After Power Failure	5 minutes (time is adjustable)
Protection Functions	Reverse polarity, short circuit, islanding, overheating, overload, etc.
Display Method	Touch screen
Wind Turbine Power Curve	30 power points can be set
Operating Temperature	-10℃~+50℃ (☆Other temperatures can be customized)
Relative Humidity	0-90% (non-condensing)
Altitude	≤6000m. Derating is required above 2000 meters (1% derating for every 100 meters increase)
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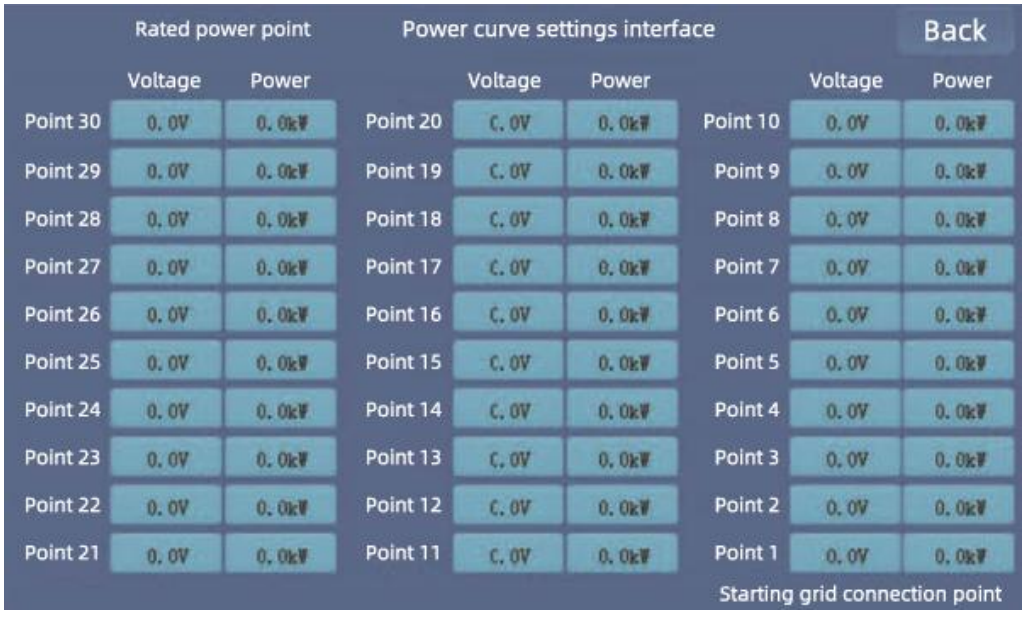
Protection Class	IP20 (☆Customizable to IP54)
Communication Protocol	Modbus RTU/ Modbus TCP

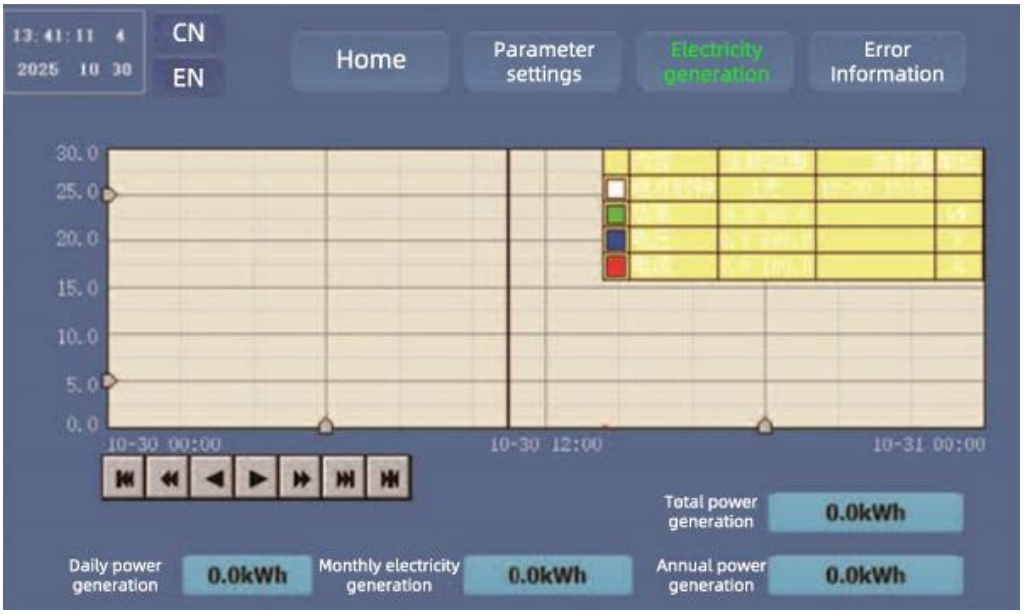
☆ indicates optional features. The above technical parameters are standard parameters and are for reference only; they can be customized according to the user's actual needs.

The current values in the table are calculated based on a standard AC 380V three-phase hydroelectric generator.


13:46:20 4
2025 10 30
CN
EN
Home
Parameter settings
Electricity generation
Error Information
Input overvoltage value
0V
Input undervoltage value
0V
Mains overvoltage value
1.00
-1.00
Mains voltage undervoltage value
50.0kW
0.0kW
Power factor setting
10S
0S
485 communication address
1
Ethernet IP address
192.168.1.101
Enable overvoltage self-recovery?
Use
0Min
Mains overvoltage value
0V
Mains voltage undervoltage value
0V
Frequency upper limit
0.0Hz
Frequency lower limit
0.0Hz
AC overcurrent value
0A
Enable terminal start/stop?
Use
Power curve settings
Back


13:48:49 4
2025 10 30
CN
EN
Home
Parameter settings
Electricity generation
Error Information
Historical failures
Input overvoltage
Input undervoltage
Phase A overvoltage
Phase A undervoltage
Phase B overvoltage
Phase B undervoltage
Phase C overvoltage
Phase C undervoltage
Frequency anomaly
Phase A overcurrent
Phase B overcurrent
Phase C overcurrent
Emergency stop
Overheat
Module failure
Programmed shutdown
System failure
Hardware failure
Consecutive errors
Under-power protection


Rated power point
Power curve settings interface
Back
Voltage
Power
Point 30 0.0V 0.0kW
Point 29 0.0V 0.0kW
Point 28 0.0V 0.0kW
Point 27 0.0V 0.0kW
Point 26 0.0V 0.0kW
Point 25 0.0V 0.0kW
Point 24 0.0V 0.0kW
Point 23 0.0V 0.0kW
Point 22 0.0V 0.0kW
Point 21 0.0V 0.0kW
Point 20 0.0V 0.0kW
Point 19 0.0V 0.0kW
Point 18 0.0V 0.0kW
Point 17 0.0V 0.0kW
Point 16 0.0V 0.0kW
Point 15 0.0V 0.0kW
Point 14 0.0V 0.0kW
Point 13 0.0V 0.0kW
Point 12 0.0V 0.0kW
Point 11 0.0V 0.0kW
Point 10 0.0V 0.0kW
Point 9 0.0V 0.0kW
Point 8 0.0V 0.0kW
Point 7 0.0V 0.0kW
Point 6 0.0V 0.0kW
Point 5 0.0V 0.0kW
Point 4 0.0V 0.0kW
Point 3 0.0V 0.0kW
Point 2 0.0V 0.0kW
Point 1 0.0V 0.0kW
Starting grid connection point



Optional features:

Input Dry Contacts: Start/Stop dry contact, Reset control dry contact, etc.

Output Dry Contacts: Running status dry contact, Fault status dry contact, Power-on status dry contact, etc.

Dry Contact Definitions:

(1) Start/Stop Dry Contact: Input type, equipment runs when the dry contact is closed; equipment stops when the dry contact is open.

(2) Reset Control Dry Contact: Input type, the equipment performs fault reset when the dry contact changes from open to closed (rising edge of the signal), and the closed state of the dry contact should be no less than 1 second.

(3) Running Status Dry Contact: Output type, the dry contact operates when the equipment is running and stopped, 1NO+1NC.

(4) Fault Status Dry Contact: Output type, the dry contact operates when the equipment malfunctions, 1NO+1NC.

(5) Power-on Status Dry Contact: Output type, the dry contact operates when the equipment is powered on and the screen is lit, 1NO+1NC.

Note: For the selection of the number of dry contacts and definitions of other functional dry contacts, please consult technical support.

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