

Goodrive20/Goodrive310 Series

General Purpose Vector Control Drive

Your Trusted Industry Automation Solution Provider



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- | | | | | |
|-------------------------------|--|---------------------------------------|----------------------------|-----------------------------------|
| Industrial Automation: | • Frequency Inverter | • Servo & Motion Control | • Motor & Electric Spindle | • PLC |
| | • HMI | • Intelligent Elevator Control System | • Traction Drive | |
| Electric Power: | • SVG | • Solar Inverter | • UPS | • Online Energy Management System |
| | • New Energy Vehicle Electric Control System | | | |

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Y7/1-11 V6.0



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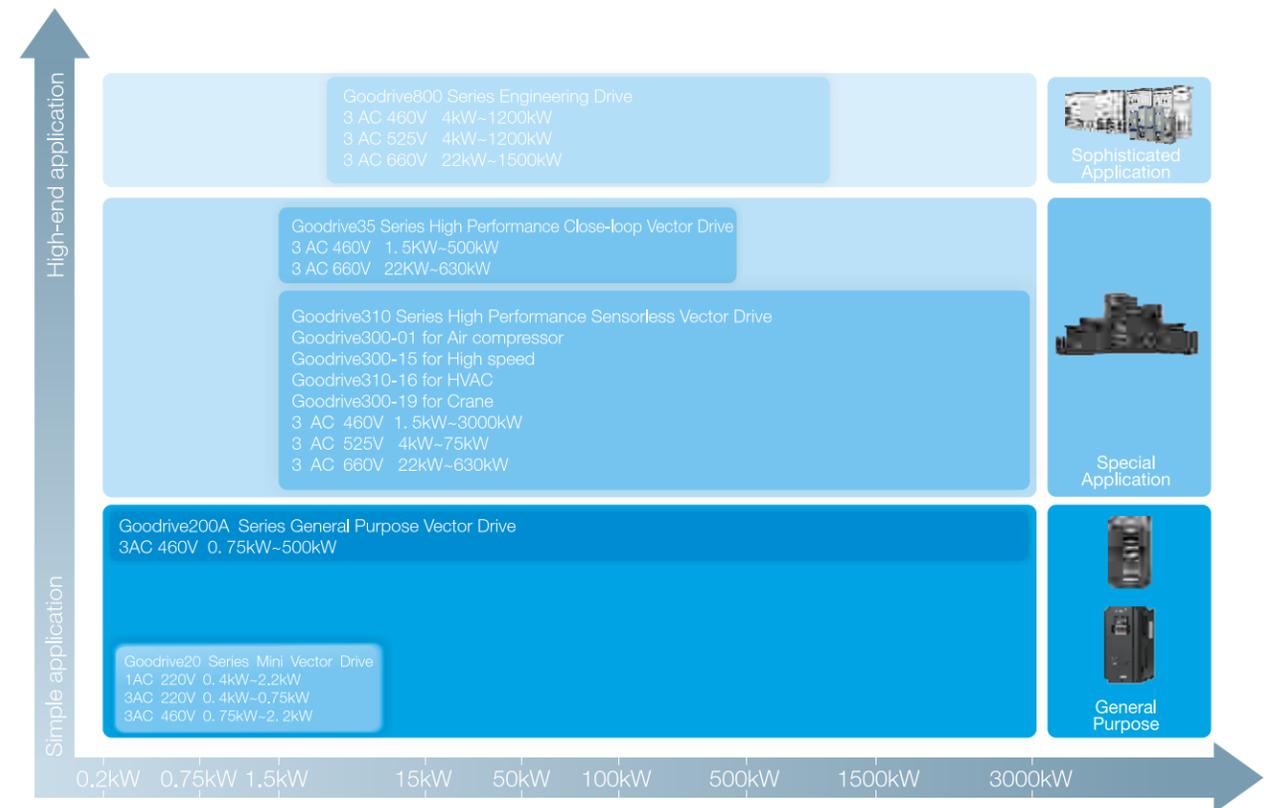
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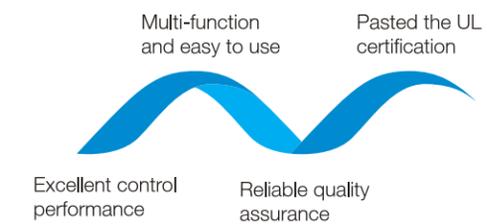
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Low Voltage Drive Family



Product Advantage





Goodrive20 Series Mini Vector Control Inverter

Goodrive20 series mini type general vector inverter, positioned as using the high performance mini product of small power market; product using the leading international vector control algorithm, with excellent product features, compatible with wall and rail installation, and the product volume is smaller. Product widely used in Textile machinery, Food machinery, Plastic machinery, Printing and packaging, Environmental protection equipment, Ceramic equipment, Woodworking equipment, Conveying equipment and so on industries.

Product Advantage

- Mini structure
- Easy maintenance
- Various installation ways
- Excellent performance
- Multi-function and easy to use



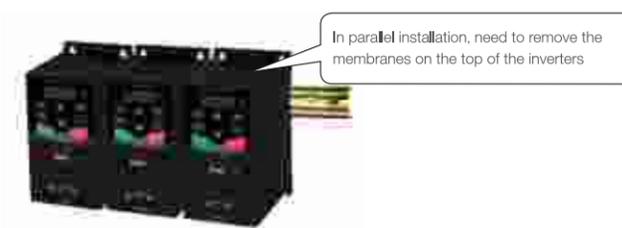
Product Features

New Structure Design

- Mini design, smaller installation space
- Compatible with rail and wall installation, flexible installation manner



- Available multi-inverter in parallel installation, more effective space-saving



Easy Maintenance

- External keypad
The standard keypad is membrane keypad. Support external LED keypad. The LED keypad support parameter copy.



- Plug cooling fan, easy maintenance



Reliable QA

- The product design strictly follows IEC international standards and passed CE and UL certification

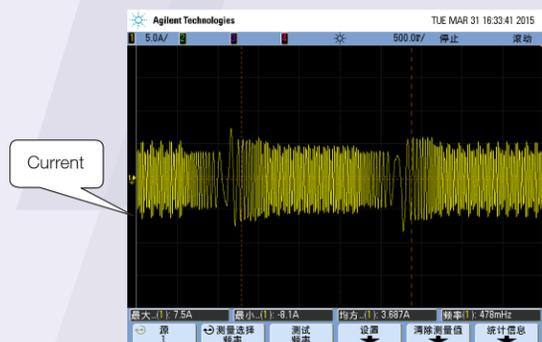


- Advanced thermal technology makes exact thermal design



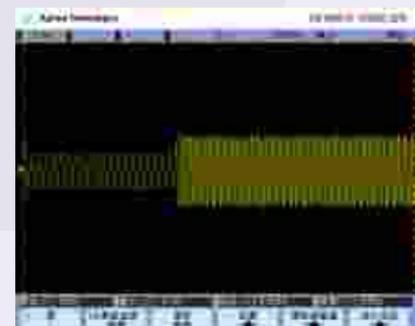
Excellent Performance

- Excellent vector control performance

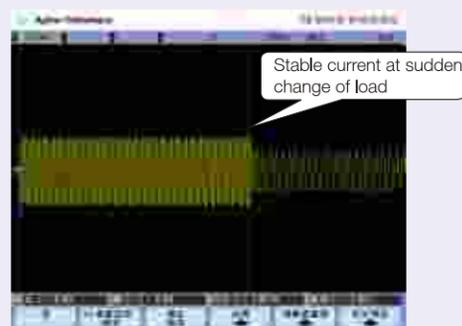


Current waveforms in vector control mode with 50Hz and full load

- Excellent motor drive performance



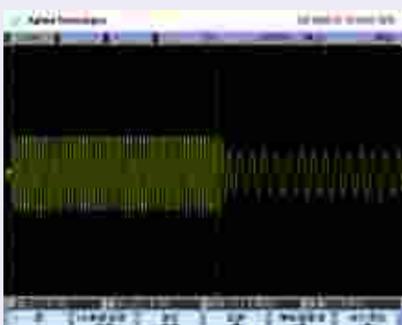
Current waveforms when sudden loading in V/F control mode with 2Hz and full load



Current waveforms when sudden unloading in V/F control mode with 2Hz and full load

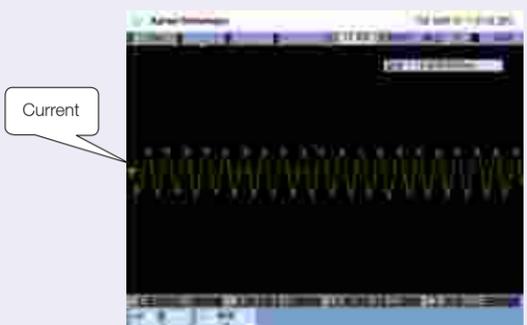


Current waveforms when sudden loading in vector control mode with 0.5Hz and full load

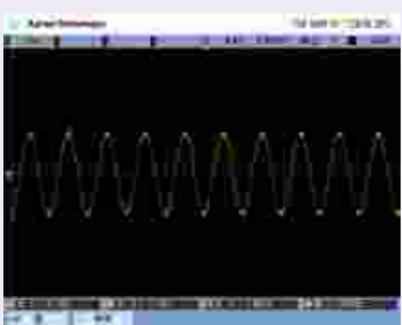


Current waveforms when sudden unloading in vector control mode with 0.5Hz and full load

- Excellent high frequency running performance



Current waveforms when stably running in vector control mode with 400Hz



Current waveforms when stably running in vector control mode with 200Hz

Multi-Function and Easy to Use

| Name | Function | Illustration |
|---|--|--|
| RS485 communication | Connect with upper computer, read and modify parameters of the inverter, control running states of the inverter | Standard built-in RS485 communication interface |
| PID | Carry out PID operation on feedback signals, control output frequency of the inverter and improve target accuracy and stability; apply to pressure, flux and temperature process control | Support PID output polarity switching |
| Motor autotuning | Carry out rotation or static auto-tuning, improve control accuracy and response speed | Include rotation auto-tuning and static auto-tuning |
| Simple PLC | Can change the running frequency and direction automatically according to the running time set by simple PLC to meet process requirements | Support multiple running modes |
| Multi-step speed control | Can meet the requirements of speed control in different periods of time via multi-step speed control | Max. available 16-step speed control |
| Multiple V/F curve settings | Meet the requirements of fans and water pumps in energy-saving operation and various variable frequency power supplies, adapt to different load applications | Linear, multi-dot, multi-power and V/F separation settings, realize flexible setting of V/F curves |
| Virtual terminals | Can take external signals as local virtual I/O to save hardware configuration | Enable the corresponding virtual terminal functions in communication mode |
| Delay switching on and off | Provide more programming and control modes | Max. switching on-off delay is 50s |
| Continuous running in instantaneous power off | Specially apply to the situations with high requirement of continuous operation, ensure the device does not stop in instantaneous power off | At transient voltage drop, the inverter can keep running by feedback energy without stop in valid time |
| Various protection functions | Provide overall fault protection functions | Protection functions such as overcurrent, overvoltage, undervoltage, overheating, overload, can save fault information |
| Optional braking modes | Provide multiple braking modes, satisfy accurate and quick stop under different loads | DC braking, Flux braking, Dynamic braking |
| Battery capacity display | Can display the accumulative power consumption on the inverter in no need of watt-hour meter | Can check power consumption of the inverter |

Applications



Textile machinery



Food machinery



Plastic machinery



Printing and packaging



Environmental protection equipment



Ceramic equipment



Woodworking equipment



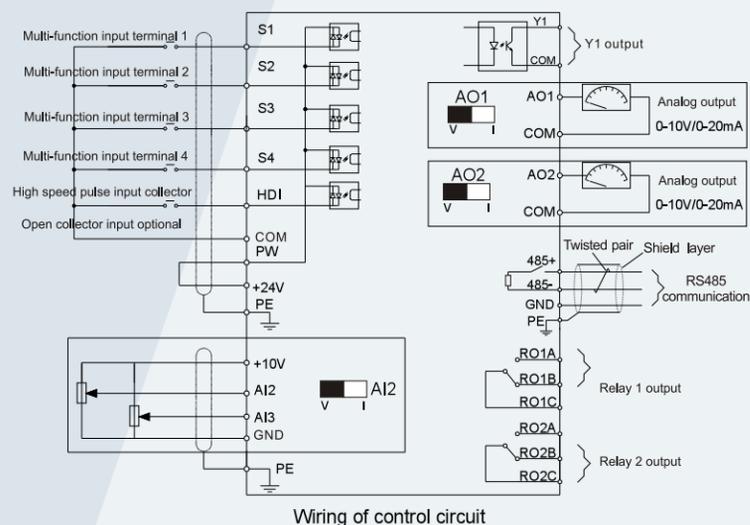
Conveying equipment

Technical Specifications

| | Function | Specification |
|---------------------------|--|---|
| Power input | Input voltage (V) | 1PH 220V (-15%)-240V 3PH 380V (-15%)-480V |
| | Input current (A) | Refer to the rated value |
| | Input frequency (Hz) | 50Hz or 60Hz, allowed range: 47-63Hz |
| Power output | Output motor capacity (kW) | Refer to the rated value |
| | Output current (A) | Refer to the rated value |
| | Output voltage (V) | 0-Input voltage, error<5% |
| Technical control feature | Control mode | SVPWM, SVC |
| | Adjustable-speed ratio | 1:100 |
| | Speed control accuracy | ±0.2% (SVC) |
| | Speed fluctuation | ±0.3% (SVC) |
| | Torque response | ≈20ms (SVC) |
| | Torque control accuracy | 10% |
| | Starting torque | 0.5Hz/150% (SVC) |
| Running control feature | Overload capability | 150% of rated current: 1 minute 180% of rated current: 10 seconds 200% of rated current: 1 second |
| | Frequency setting method | Digital setting, analog setting, pulse frequency setting, multi-step speed running setting, simple PLC setting, PID setting, MODBUS communication setting |
| Peripheral interface | Auto-adjustment of the voltage | Keep a stable voltage automatically when the grid voltage transients |
| | Fault protection | Provide comprehensive fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc |
| | Analog input | 1 (AI2) 0~10V/0~20mA and 1 (AI3) -10~10V |
| Others | Analog output | 2 (AO1, AO2) 0~10V/0~20mA |
| | Digital input | 4 common inputs, the Max frequency: 1kHz; 1 high speed input, the Max frequency: 50kHz |
| | Digital output | 1 Y terminal output |
| | Relay output | 2 programmable relay outputs RO1A NO, RO1B NC, RO1C common terminal RO2A NO, RO2B NC, RO2C common terminal Contactor capacity: 3A/AC250V |
| Others | Mountable method | Wall and rail mountable |
| | Braking unit | Embedded |
| | EMI filter | Optional filter: meet the degree requirement of IEC61800-3 C2, IEC61800-3 C3 |
| | Temperature of the running environment | -10~50°C, If above 40°C, derate 1% for every additional 1°C. |
| | Altitude | <1000m If the sea level is above 1000m, please derate 1% for every additional 100m |
| | Protective degree | IP20 |
| | Safety | Meet the requirement of CE&UL |
| | Cooling | Air-cooling |

Standard Wiring

Wiring Diagram of Control Circuit



Type Selection

Type Designation Key

GD20-1R5G-4-UL

① ② ③ ④

| Key | No. | Detailed description | Detailed content |
|----------------|-----|-------------------------|--|
| Abbreviation | ① | Product abbreviation | GD20 is short for Goodrive20 |
| Rated power | ② | Power range+load type | 1R5-1.5kW G: constant torque load |
| Voltage degree | ③ | Voltage degree | S2: AC 1PH 200V~240V Rated voltage: 220V 4: AC 3PH 380V~480V Rated voltage: 460V |
| Certification | ④ | Certification standards | CE(Default) : Meet CE certification requirements UL: Meet UL certification requirements |

Power Ratings And Dimensions

| Model | Rated output power(kW) | Rated output horsepower(HP) | Rated input current(A) | Rated output current(A) | Gross weight (Kg) | Dimension(mm) W*H*D |
|-----------------|------------------------|-----------------------------|------------------------|-------------------------|-------------------|---------------------|
| GD20-0R4G-S2-UL | 0.4 | 0.5 | 6.5 | 2.5 | 1.4Kg | 80*160*123.5 |
| GD20-0R7G-S2-UL | 0.75 | 1 | 9.3 | 4.2 | | |
| GD20-1R5G-S2-UL | 1.5 | 2 | 15.7 | 7.5 | | |
| GD20-2R2G-S2-UL | 2.2 | 3 | 24 | 10 | 1.7 Kg | 80*185*140.5 |
| GD20-0R4G-2-UL | 0.4 | 0.5 | 3.7 | 2.5 | | |
| GD20-0R7G-2-UL | 0.75 | 1 | 5.0 | 4.2 | | |
| GD20-0R7G-4-UL | 0.75 | 1 | 3.4 | 2.5 | 1.3 Kg | 80*185*140.5 |
| GD20-1R5G-4-UL | 1.5 | 2 | 5.0 | 4.2 | | |
| GD20-2R2G-4-UL | 2.2 | 3 | 5.8 | 5.5 | | |

Optional Parts

External LED Keypad

Including the external keypads with and without the function of parameter copying. The external keypad without the function of parameter copying apply to common applications and commissioning situations; the external keypad with the function of parameter copying apply to the situations when multiple inverters are in commissioning at the same time and need parameter copying.



Reactor

Input reactor: Improve the power factor of the input side of the inverter and control the higher harmonic current.
Output reactor: Prolong the effective transmitting distance of the inverter and control the sudden high voltage when switching on/off the IGBT of the inverter.



Filter

Input filter: Control the electromagnetic interference generated from the inverter, please install close to the input terminal side of the inverter.
Output filter: Control the interference from the output side of the inverter, please install close to the output terminals of the inverter.



Braking Resistor

Shorten the Decelerate time.
Only braking resistors are needed for Goodrive20 inverters.



Dam-board of Heat Releasing Holes at the Side

Apply to severe environment and improve protective effect.
Derate 10% of the machine.



Keypad Bracket

Use it to install the keypad on the front of cabinet





Goodrive310 Series General Purpose Vector Control Inverter

Goodrive310 series inverters are high performance open loop vector inverters for controlling asynchronous AC induction motors and permanent magnet synchronous motors. Applying the most advanced sensorless vector control technology which keeps pace with the leading international technology and DSP control system, the product enhances its reliability to meet the requirement of environment adaptability, customized and industrialized design with more optimized functions, more flexible application and more stable performance.

Product Advantage

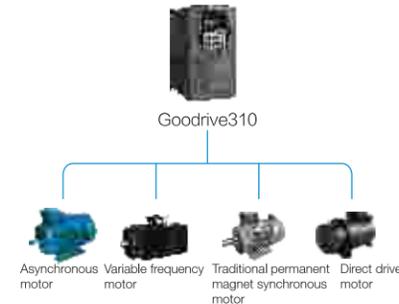
- Combined Drive
- Multi-function with simple operation
- Reliable quality certificated by TÜV SÜD
- 3 International Communication Protocols



Combined Drive

Compatible with Multiple Motors

Vector drive for asynchronous AC induction motors and permanent magnet synchronous motors. Reduce the inventory effectively without considering the motor compatibility.



Remarks:
1.The traditional permanent magnet synchronous motor includes SPM and IPM.
2.The variable frequency motor includes high speed spindle.

More Accurate Motor Autotuning

Correct rotating and static motor autotuning. Convenient debugging, easy operation.

Rotating Autotuning

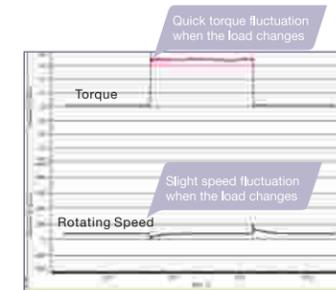
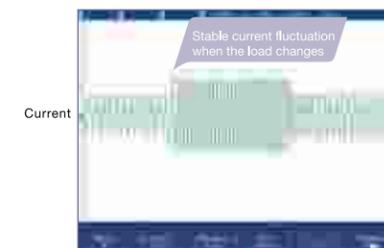
Need to separate motor from the load, Applied to the situation with high control accuracy

Static Autotuning

No need to separate motor from the load, Applied when rotating autotuning is not available

Optimized SVPWM Control

The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor SVPWM control mode with 2Hz running frequency and full load.

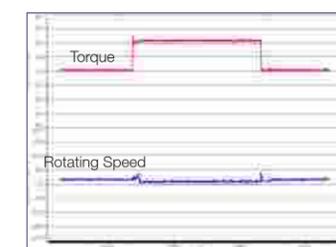


Advanced Open Loop Vector Control

Asynchronous Motor

| Starting Torque | Dynamic Response | Speed Ratio | Steady Speed Accuracy |
|-----------------------------|------------------|-------------|-----------------------|
| 0.25Hz/150% of rated torque | <20ms | 1: 200 | ±0.2% |

The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor open loop vector control mode with 0.25Hz running frequency and full load.



Synchronous Motor

Starting Torque

2.5Hz/150% of rated torque

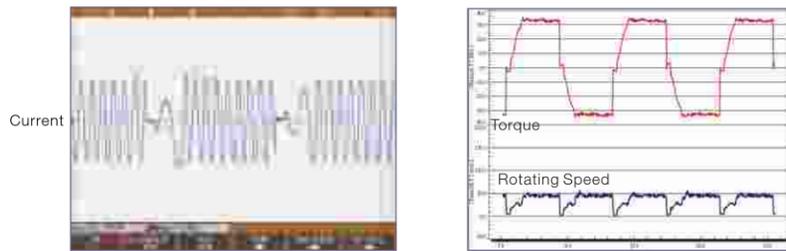
Dynamic Response

<40ms

Speed Ratio

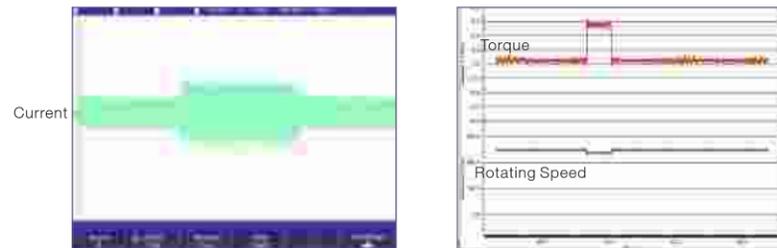
1: 20

The current, torque and rotating speed waveforms when sudden loading or unloading in synchronous motor open loop vector control mode with 3Hz running frequency and full load.

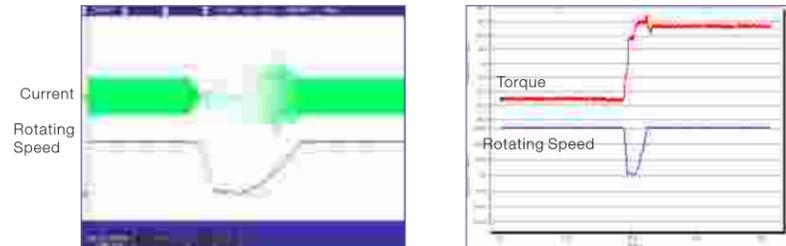


Torque Control Mode(open loop)

The current, torque and rotating speed waveforms when sudden loading or unloading in asynchronous motor torque control mode with full load.

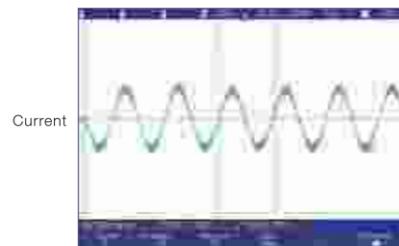
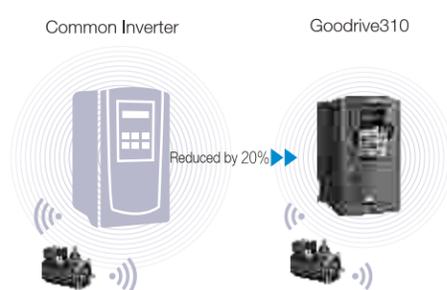


The FWD/REV current, torque and rotating speed waveforms in synchronous motor torque control mode with 100Hz running frequency and full load.



More Smoother and More Quietter Running by Applying Advanced 3-phase Modulation

Excellent Performance on Specific Motors such as High Speed Spindle, Direct-control Motor



The current waveforms in synchronous motor open loop vector control mode with 300Hz running frequency and full load.

Multiple Braking Modes and Instant Stopping

Dynamic Braking

Configure braking units and resistors
Available on the situation of big inertia load and frequent braking
Big braking torque and quick braking

DC Braking

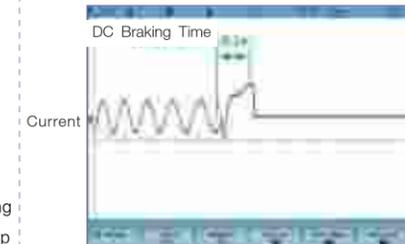
No need to configure braking units and resistors
Available on the situation when start the running motor after braking and the situation when keep the moment output after braking to zero speed
Not available on the situation of big inertia load or instant stopping braking in high speed running

Flux Braking

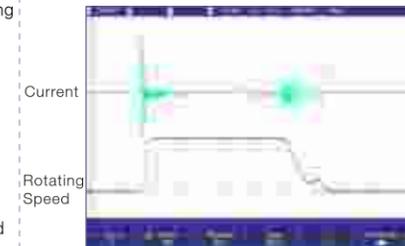
No need to configure braking units and resistors
Available on the instant stopping situation with big inertia load and no frequent braking
Not available on the situation of big inertia load and frequent braking(the energy consumed on the stator and its cooling is better than DC braking)

Short Circuit Braking

No need to configure braking units and resistors, capable of braking quickly
Applicable to the motors at quick start and stop or restart after braking
Not applicable to big inertia load and frequent braking



The current waveform in asynchronous motor SVPWM control mode with 100% braking current when the starting frequency is 10Hz and the braking time is 0.1s.



Short circuit braking waveform of synchronous motors. The acceleration time is 0.1s and the deceleration time is 0.4s(rated frequency: 100Hz,braking frequency :20Hz,braking time:0.5s)



Flux braking current waveform when the running frequency is 50Hz, deceleration time is 0.1s with full load in asynchronous motor SVPWM control mode

Perfect Voltage and Current Control, Reducing the Fault Protection Times

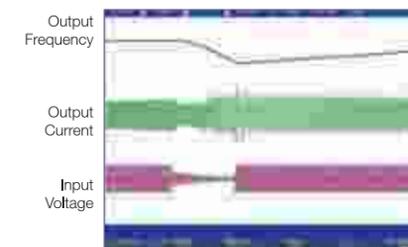
OV Fault

Adjust the output frequency to avoid overvoltage of the DC bus during deceleration

OC Fault

Adjust the output frequency to avoid overcurrent of the inverter during acceleration

Continuous Running in Instantaneous Power Off

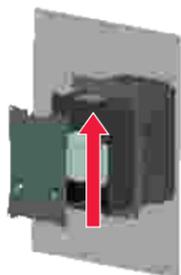


The inverter can keep running if the grid voltage drops and used in the situation with high requirement such as fiberic and textile production line.

Multi-function with Simple Operation

Separate Air-duct

The separate air duct prevents the contaminants into the electronic parts/components and greatly improves the protective effect of the inverter, as well as its reliability and service life, to adapt various complicated site environments. It can also facilitate the heat-releasing in control cabinets and the heat-releasing design of the customer.



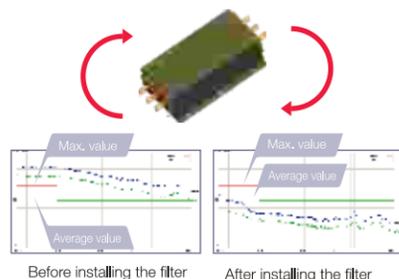
Multiple Installation Modes

Wall, flange and floor installation



C3 Input Filters (Standard) and C2 Filters(Optional)

C3 input filter is embedded in the factory to meet different application requirements, save installation space and avoid the electromagnetic interference caused by incorrect selection and site installation.



Conductive interference test of the power supply terminals

Remarks:

- (1)C2 filter: EMC performance of the inverter achieves the limited usage requirement in civil environment.
- (2)C3 filter: EMC performance of the inverter achieves the limited usage requirement in industrial environment.

Book Structure

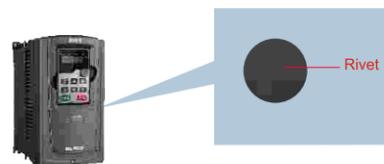
Parallel installation
Little installation space with less cost and beautiful appearance.



The Rivet Design Ensures Reliable Integration Connection

Greener
Stronger corrosion-resistance

Proper grounding
Excellent EMC performance



Abundant I/O Terminals

| Terminals | Quantity | Features |
|-------------------------|------------|--------------------------------|
| Digital input | 8 channels | 1kHz NPN and PNP |
| High speed pulse input | 1 channel | 50kHz NPN and PNP |
| Analog input | 3 channels | 0~10V, 0~20mA, -10V~+10V |
| ON-OFF output | 1 channel | Max. output frequency:1kHz |
| High speed pulse output | 1 channel | Max. output frequency:50kHz |
| Analog output | 2 channels | 0~10V, 0~20mA |
| Relay output | 2 channels | 3A/250VAC, 1A/30VDC, NO+NC |

Smaller Size

Due to the thermal simulation and advanced modularized design, the size of our product is reduced greatly. The width ratio between Goodrive310 and CHF100A is shown in the figure below (the Max. percentage is 50%)

Goodrive310/CHF100A



Various External Interfaces and Swappable Terminal Board Convenient for Replacement and Maintenance



High Performance Keypad

The standard LED keypad supports parameters upload and download with Max. length of 200m and digital potentiometer. The optional external LCD keypad supports parameters loading and unloading with displaying 10 lines and 10 rows of Chinese characters and several languages



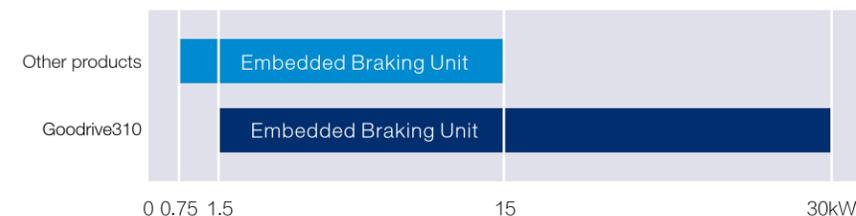
Standard LED Keypad



Optional LCD Keypad

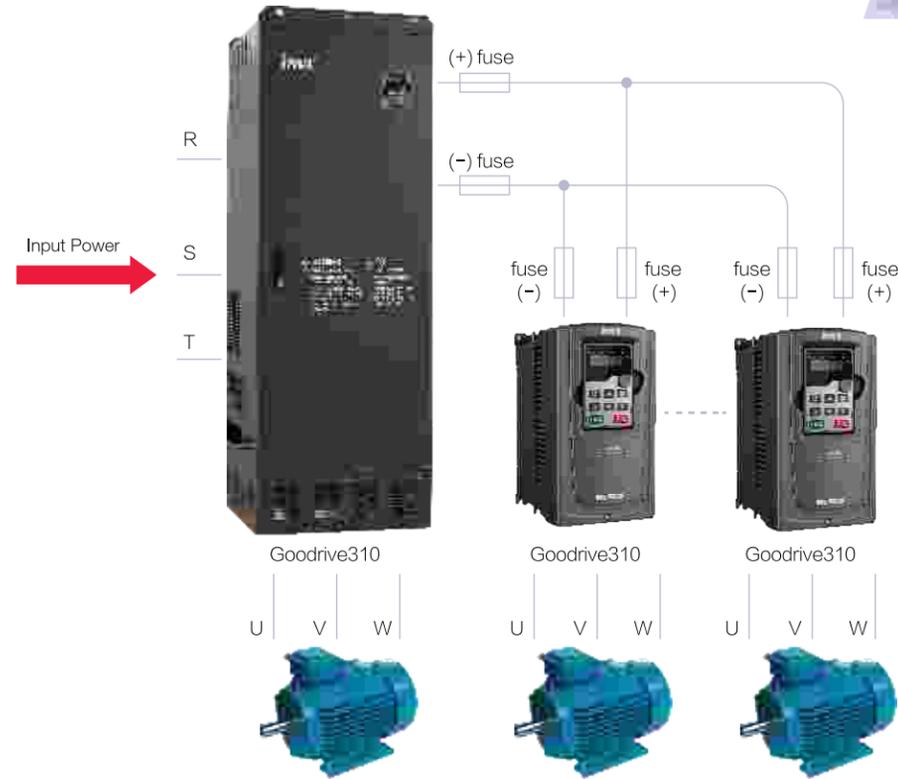
Embedded Braking Units of 1.5-30kW Inverters

Reduce the occupied space and dynamic braking is available if install corresponding braking resistors.



Supporting Common DC Bus

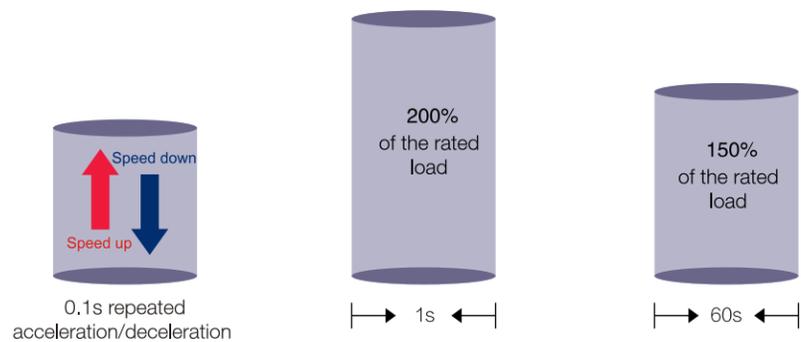
Reduce the power lost on braking resistor
Note the impact current and the capacity of input power



Available on DC Power Supply



Heavy-load Design



Various Application Function

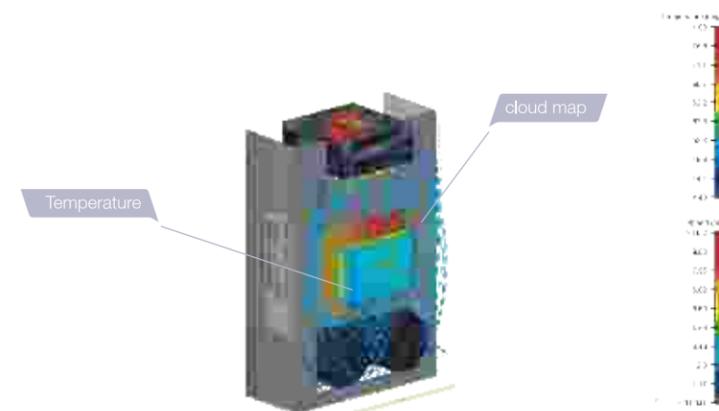
| Function | Effect |
|--|--|
| V/F separation setting | Meet the requirement of different power supplied and realize flexible setting to V/F curve |
| Two groups of motor parameters | Different motors can use the same inverter, reducing the cost, shifting between two motors making electrical control more convenient |
| Virtual terminal function | Make the middle variables as the local virtual I/O quantity, save the hardware configuration |
| Speed tracking | Available on asynchronous motor and permanent magnet synchronous motor and the situation of big inertia load, reversal rotating during starting and continuous frequent shifting |
| Digital signal, high speed pulse and relay | Provide more programmable and control modes |
| Electric power display | Display the total consumed energy. No need to use the power meter |
| Stop delay | Ensure the motor stop safely under control |

Reliable Quality Assurance

The Product Design Follows IEC National Standards and Passed CE Test and UL Certification



Advanced Thermal Technology Makes Exact Thermal Design



Perfect and Reliable Test System Ensure Products Adapt Complicated Site Environments and Achieved ACT Certificate of TÜV SÜD

| Experiment Type | Experiment Name | Classification |
|---|--|---|
| Mechanical Reliability Experiments | Packaging Experiments | Package compression experiments |
| | | Package Resonance imaging and storage test |
| | | Package random vibration test |
| | | Package dropping test |
| | | Package rolling test |
| | | Package dumping test |
| | | Package inclined impact test |
| | Impact Test | Half-sine shock test(working and non-working state) |
| | | Trapezoidal wave impulse test(non-working state) |
| | Vibration Test | Sinusoidal vibration test(working state) |
| Vibration Test | Random vibration test(working and non-working state) | |
| Climatic Environmental Reliability Test | Temperature Experiment | Low temperature storage test |
| | | High temperature storage test |
| | | Low temperature working test |
| | | High temperature working test |
| | | Gradient temperature change test |
| | | Temperature impact test |
| | Temperature & Humidity Test | Constant temperature & humidity test |
| | | Alternation temperature & humidity test |
| | Salt Spray Test | Constant salt spray test |
| | | Alternation salt spray test |
| | Low Air Pressure Test | Combined dry heat & low air pressure test |
| | | Combined cold & low air pressure test |

Remarks :
The full name of ACT is Acceptance of Client's Testing, which means the German TÜV SÜD admit the technology level of the lab and accept their separate testing data and test reports officially.



Electric Vibration System



Low Pressure Test Chamber & Constant temperature and humidity test chamber

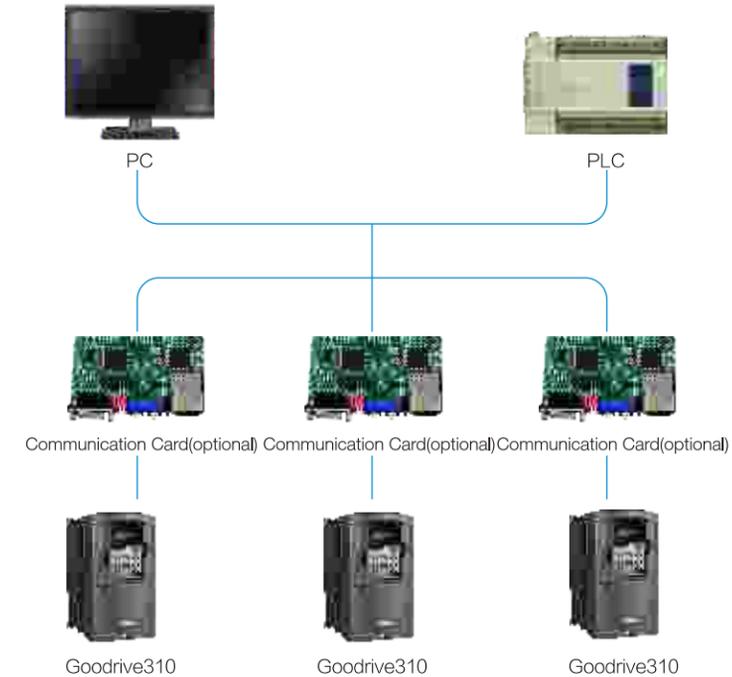


Faster temperature chamber & Thermal Shock Test Chamber

3 International Communication Protocols

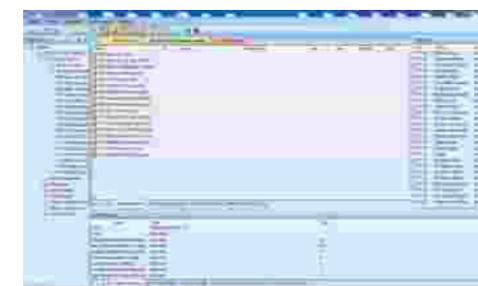
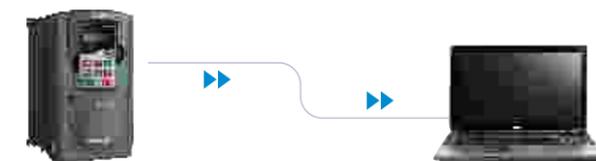
Various Communication Modes: MODBUS Communication (Standard), PROFIBUS+Ethernet and CANopen+Ethernet Communication (Optional)

- Following functions are available through communication cards:
- Send control commands(starting, stopping and fault reset) to the inverter
 - Send speed or torque reference signal to the inverter
 - Read the state and actual value from the inverter
 - Modify the parameters of the inverter



INVT Studio

INVT Studio is based on the inverter monitoring system with serial ports and Ethernet. It not only can modify and save the function codes of inverters, but also be used as oscilloscope to collect and analyze the waveform data.



Applications

Permanent Magnet Synchronous Motor

Screw oil pumps, water pumps, compressors, hoisting, chemical fabric devices, plastic machinery, wood processing machinery and machine tools



Mine

Belt conveyors, air compressors, crushers, ball mills, centrifugal dehydrators



Machines Tools

Lathes, wood processing machinery, drilling machines, grinding machines, milling machines and air compressors



Textile

Carding machines, drawing machines, roving machines, ring spinning and winding machines, warping machines, circle machines, warp knitting machines, dyeing and finishing machines, shuttleless loom machines, non-woven production lines and draw texturing machines, industrial washing machines



Oil

Oil pumps, water injection pumps, compressors



Other Machineries

Hoisting, chemical, industrial, metal processing, EPS and constructive machines



Technical Specifications

| Functions | | Specifications |
|---------------------------|---|---|
| Power input | Input voltage(V) | AC 3PH 200V~240V Rated voltage:220V AC 3PH 380V~480V Rated voltage:460V AC 3PH 520V~600V Rated voltage:575V |
| | Input frequency(Hz) | 50Hz/60Hz Allowed range:47 ~ 63Hz |
| Power output | Output voltage(V) | 0~input voltage |
| | Output frequency(Hz) | Standard:0 ~ 400Hz;(380V Goodrive310 special inverters for medium-frequency:0 ~ 3200Hz) |
| Technical control feature | Control mode | SVPWM and SVC |
| | Motor type | Asynchronous and permanent magnet synchronous motors |
| | Speed ratio | Asynchronous motor 1:200 (SVC) synchronous motor 1:20 (SVC) |
| | Speed control accuracy | ± 0.2% (SVC) |
| | Speed fluctuation | ± 0.3%(SVC) |
| | Torque response | ≤20ms(SVC) |
| | Torque control accuracy | 10%(SVC) |
| | Starting torque | Asynchronous motor: 0.25Hz/150%(SVC) Synchronous motor: 2.5 Hz/150%(SVC) |
| Running control feature | Overload capability | G Type: 150% of rated current: 1 minute P Type: 120% of rated current: 1 minute 180% of rated current: 10 seconds 200% of rated current: 1 second |
| | Frequency setting | Digital setting, analog setting, pulse frequency setting, multi-step speed running setting, simple PLC setting, PID setting, MODBUS communication setting, PROFIBUS communication setting and CANopen communication setting. Switch between the combination and single setting channel. |
| Peripheral interface | Auto-adjustment of the voltage | Keep constant voltage automatically when the grid voltage transients |
| | Fault protection | Provide more than 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc. |
| | Restart after rotating speed tracking | Smooth starting of the rotating motor |
| Others | Terminal analog input resolution | ≤20mV |
| | Terminal switch input resolution | ≤2ms |
| | Analog Input | 2 (AI1, AI2) 0~10V/0~20mA and 1 (AI3) -10~10V |
| | Analog output | 2 (AO1, AO2) 0~10V /0~20mA |
| | Digital input | 8 common inputs, the Max. frequency: 1kHz, 1 high speed input, the Max. frequency: 50kHz |
| | Digital output | 1 high speed pulse output, the Max. frequency: 50kHz; 1 Y terminal open collector output |
| | Relay output | 2 programmable relay outputs RO1A NO, RO1B NC, RO1C common terminal RO2A NO, RO2B NC, RO2C common terminal Contactor capacity: 3A/AC250V,1A/DC30V |
| Others | Mountable method | Wall and flange mountable |
| | Temperature of the running environment | -10~50°C, If above 40°C, derate 1% for every additional 1°C. |
| | Protective degree | IP20 |
| | Cooling | Air-cooling |
| | Braking unit | Built-in(≤30kW) External for others |
| | Braking resistor | Optional |
| EMC filter | Built-in C3 filter: meet the degree requirement of IEC61800-3 C3 Optional external C2 filter: meet the degree requirement of IEC61800-3 C2 | |

*The overload capability of P type is convert from the G type's. For example, the coefficient of P type overload at 1 minute is: (The rated current of G type)*150%/(The rated current of P type), so the coefficient of GD310-018P-4 overload at 1 minute is: 32*150%/38=126%.

Type Designation Key

GD310-022G-4-UL

① ② ③ ④

| Key | No. | Detailed description | Detailed content |
|----------------|-----|-------------------------|---|
| Abbreviation | ① | Product abbreviation | GD310 is short for Goodrive310 |
| Rated power | ② | Power range-load type | 022: 22kW G: Constant torque load P: Variable torque load |
| Voltage degree | ③ | Voltage degree | 2: AC 3PH 200V~240V Rated voltage: 220V 4: AC 3PH 380V~480V Rated voltage: 460V 6: AC 3PH 520V~600V Rated voltage: 575V |
| Certification | ④ | Certification standards | CE(Default) : Meet CE certification requirements UL: Meet UL certification requirements |

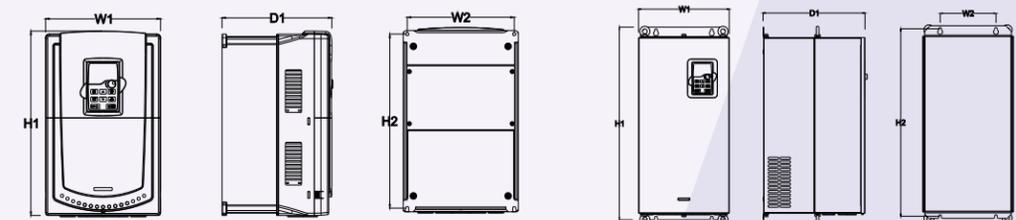
Power Ratings

| Model | Rated output power(kW) | Rated output horsepower (HP) | Rated input current (A) | Rated output current (A) | G.W.(kg) | N.W.(kg) |
|-----------------|------------------------|------------------------------|-------------------------|--------------------------|----------|----------|
| GD310-0R7G-2-UL | 0.75 | 1 | 5 | 4.5 | 2.7 | 2 |
| GD310-1R5G-2-UL | 1.5 | 2 | 7.7 | 7 | 4 | 3.5 |
| GD310-2R2G-2-UL | 2.2 | 3 | 11 | 10 | 4 | 3.5 |
| GD310-004G-2-UL | 4 | 5 | 17 | 16 | 6.5 | 6 |
| GD310-5R5G-2-UL | 5.5 | 7.5 | 21 | 20 | 6.5 | 6 |
| GD310-7R5G-2-UL | 7.5 | 10 | 31 | 30 | 9 | 7.8 |
| GD310-011G-2-UL | 11 | 15 | 43 | 42 | 11.5 | 9.5 |
| GD310-015G-2-UL | 15 | 20 | 56 | 55 | 11.5 | 9.5 |
| GD310-018G-2-UL | 18.5 | 25 | 71 | 70 | 32 | 30 |
| GD310-022G-2-UL | 22 | 30 | 81 | 80 | 32 | 30 |
| GD310-030G-2-UL | 30 | 40 | 112 | 110 | 32 | 30 |
| GD310-037G-2-UL | 37 | 50 | 132 | 130 | 57 | 46.5 |
| GD310-045G-2-UL | 45 | 60 | 163 | 160 | 57 | 46.5 |
| GD310-055G-2-UL | 55 | 75 | 200 | 200 | 57 | 46.5 |
| GD310-1R5G-4-UL | 1.5 | 2 | 5 | 3.7 | 2.7 | 2 |
| GD310-2R2G-4-UL | 2.2 | 3 | 5.8 | 5 | 2.7 | 2 |
| GD310-004G-4-UL | 4 | 5 | 13.5 | 9.5 | 4 | 3.5 |
| GD310-5R5G-4-UL | 5.5 | 7.5 | 19.5 | 14 | 4 | 3.5 |
| GD310-7R5G-4-UL | 7.5 | 10 | 25 | 18.5 | 6.5 | 6 |
| GD310-011G-4-UL | 11 | 15 | 32 | 25 | 6.5 | 6 |
| GD310-015G-4-UL | 15 | 20 | 40 | 32 | 9 | 7.8 |
| GD310-018G-4-UL | 18.5 | 25 | 47 | 38 | 9 | 7.8 |
| GD310-022G-4-UL | 22 | 30 | 56 | 45 | 11.5 | 9.5 |
| GD310-030G-4-UL | 30 | 40 | 70 | 60 | 11.5 | 9.5 |
| GD310-037G-4-UL | 37 | 50 | 80 | 75 | 32 | 30 |
| GD310-045G-4-UL | 45 | 60 | 94 | 92 | 32 | 30 |
| GD310-055G-4-UL | 55 | 75 | 128 | 115 | 32 | 30 |
| GD310-075G-4-UL | 75 | 100 | 160 | 150 | 57 | 46.5 |
| GD310-090G-4-UL | 90 | 125 | 190 | 180 | 57 | 46.5 |
| GD310-110G-4-UL | 110 | 150 | 225 | 215 | 57 | 46.5 |
| GD310-132G-4-UL | 132 | 175 | 265 | 260 | 96 | 85 |
| GD310-160G-4-UL | 160 | 215 | 310 | 305 | 96 | 85 |
| GD310-185G-4-UL | 185 | 250 | 345 | 340 | 96 | 85 |
| GD310-200G-4-UL | 200 | 270 | 385 | 380 | 96 | 85 |
| GD310-220G-4-UL | 220 | 300 | 430 | 425 | 247 | 312 |
| GD310-250G-4-UL | 250 | 340 | 485 | 480 | 247 | 312 |
| GD310-280G-4-UL | 280 | 375 | 545 | 530 | 247 | 312 |
| GD310-315G-4-UL | 315 | 425 | 610 | 600 | 247 | 312 |
| GD310-350G-4-UL | 350 | 475 | 625 | 650 | 452 | 400 |
| GD310-400G-4-UL | 400 | 536 | 715 | 720 | 452 | 400 |

| Model | Rated output power(kW) | Rated output horsepower (HP) | Rated input current (A) | Rated output current (A) | G.W.(kg) | N.W.(kg) |
|-----------------|------------------------|------------------------------|-------------------------|--------------------------|----------|----------|
| GD310-500G-4-UL | 500 | 675 | 890 | 860 | 452 | 400 |
| GD310-5R5P-4-UL | 5.5 | 7.5 | 19.5 | 14 | 4 | 3.5 |
| GD310-7R5P-4-UL | 7.5 | 10 | 25 | 18.5 | 4 | 3.5 |
| GD310-011P-4-UL | 11 | 15 | 32 | 25 | 6.5 | 6 |
| GD310-015P-4-UL | 15 | 20 | 40 | 32 | 6.5 | 6 |
| GD310-018P-4-UL | 18.5 | 25 | 47 | 38 | 9 | 7.8 |
| GD310-022P-4-UL | 22 | 30 | 56 | 45 | 9 | 7.8 |
| GD310-030P-4-UL | 30 | 40 | 70 | 60 | 11.5 | 9.5 |
| GD310-037P-4-UL | 37 | 50 | 80 | 75 | 11.5 | 9.5 |
| GD310-045P-4-UL | 45 | 60 | 94 | 92 | 32 | 30 |
| GD310-055P-4-UL | 55 | 75 | 128 | 115 | 32 | 30 |
| GD310-075P-4-UL | 75 | 100 | 160 | 150 | 57 | 46.5 |
| GD310-090P-4-UL | 90 | 125 | 190 | 180 | 57 | 46.5 |
| GD310-110P-4-UL | 110 | 150 | 225 | 215 | 57 | 46.5 |
| GD310-132P-4-UL | 132 | 175 | 265 | 260 | 96 | 85 |
| GD310-160P-4-UL | 160 | 215 | 310 | 305 | 96 | 85 |
| GD310-185P-4-UL | 185 | 250 | 345 | 340 | 96 | 85 |
| GD310-200P-4-UL | 200 | 270 | 385 | 380 | 96 | 85 |
| GD310-220P-4-UL | 220 | 300 | 430 | 425 | 96 | 85 |
| GD310-250P-4-UL | 250 | 340 | 485 | 480 | 247 | 215 |
| GD310-280P-4-UL | 280 | 375 | 545 | 530 | 247 | 215 |
| GD310-315P-4-UL | 315 | 425 | 610 | 600 | 247 | 215 |
| GD310-350P-4-UL | 350 | 475 | 625 | 650 | 247 | 215 |
| GD310-400P-4-UL | 400 | 536 | 715 | 720 | 452 | 400 |
| GD310-500P-4-UL | 500 | 675 | 890 | 860 | 452 | 400 |
| GD310-018G-6-UL | 18.5 | 25 | 35 | 27 | 32 | 30 |
| GD310-022G-6-UL | 22 | 30 | 40 | 35 | 32 | 30 |
| GD310-030G-6-UL | 30 | 40 | 47 | 45 | 32 | 30 |
| GD310-037G-6-UL | 37 | 50 | 52 | 52 | 57 | 46.5 |
| GD310-045G-6-UL | 45 | 60 | 65 | 62 | 57 | 46.5 |
| GD310-055G-6-UL | 55 | 75 | 85 | 86 | 57 | 46.5 |
| GD310-075G-6-UL | 75 | 100 | 95 | 98 | 57 | 46.5 |
| GD310-090G-6-UL | 90 | 125 | 118 | 120 | 57 | 46.5 |
| GD310-110G-6-UL | 110 | 150 | 145 | 150 | 57 | 46.5 |

Dimensions (unit: mm)

Installation Size for Wall Installation



Wall installation of 460V 1.5~30kW inverters

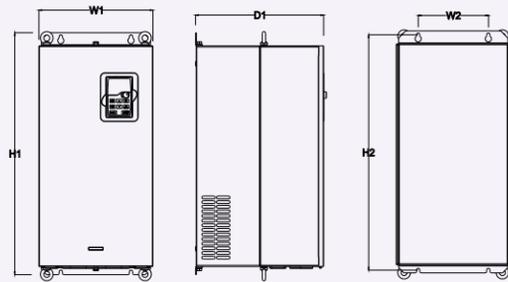
Wall installation of 220V 37~55kW inverters
Wall installation of 460V 37~110kW inverters

Wall installation dimension of 220V 37~55kW (unit: mm)

| Power Rating | W1 | W2 | H1 | H2 | D1 | Installation Holes |
|--------------|-----|-----|-----|-----|-----|--------------------|
| 37kW-55kW | 325 | 200 | 680 | 661 | 365 | 9.5 |

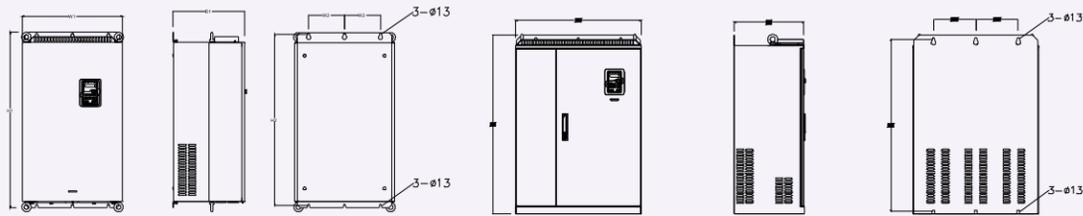
Wall installation dimension of 460V 1R5G-315G/5R5P-110P (unit: mm)

| Power Rating | W1 | W2 | H1 | H2 | D1 | Installation Holes |
|--|-----|-----|-------|-------|-------|--------------------|
| G type: 1.5kW~2.2kW | 126 | 115 | 193 | 175 | 174.5 | 5 |
| G type: 4kW~5.5kW P type: 5.5kW~7.5kW | 146 | 131 | 263 | 243.5 | 181 | 6 |
| G type: 7.5kW~11kW P type: 11~15kW | 170 | 151 | 331.5 | 303.5 | 216 | 6 |
| G type: 15kW~18kW P type: 18~22kW | 230 | 210 | 342 | 311 | 216 | 6 |
| G type: 22kW~30kW P type: 30kW~37kW | 255 | 237 | 407 | 384 | 245 | 7 |
| G type: 37kW~55kW P type: 45kW~55kW | 270 | 130 | 555 | 540 | 325 | 7 |
| G/P type: 75kW~110kW | 325 | 200 | 680 | 661 | 365 | 9.5 |



Wall installation of 575V 18.5~110kW inverters

| Power Rating | W1 | W2 | H1 | H2 | D1 | Installation Holes |
|--------------|-----|-----|-----|-----|-----|--------------------|
| 18.5kW~37kW | 270 | 130 | 555 | 540 | 325 | 7 |
| 45kW~110kW | 325 | 200 | 680 | 661 | 365 | 9.5 |



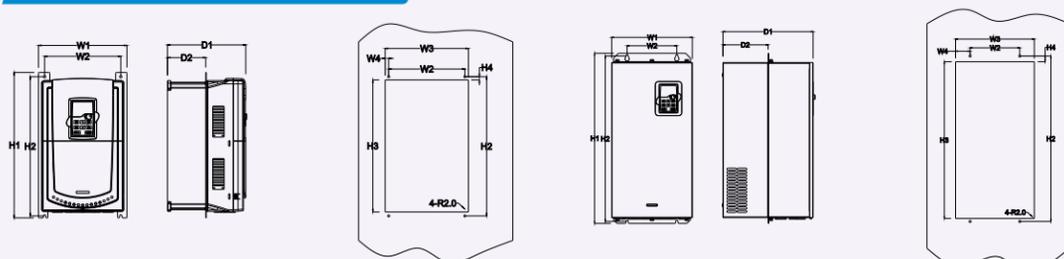
Wall installation of 460V 132G-200G/132P-220P inverters

Wall installation of 460V 220G-315G/250P-350P inverters

Wall installation dimension of 460V 132G-315G/132P-350P (unit: mm)

| Power Rating | W1 | W2 | H1 | H2 | D1 | Installation Holes |
|--|-----|-----|-----|-----|-----|--------------------|
| G type:132kW-200kW P type:132kW-220kW | 500 | 180 | 870 | 850 | 360 | 11 |
| G type:220kW-315kW P type:250kW-350kW | 600 | 230 | 960 | 926 | 380 | 13 |

Installation Size for Flange Installation



Flange installation of 460V 1.5~30kW inverters

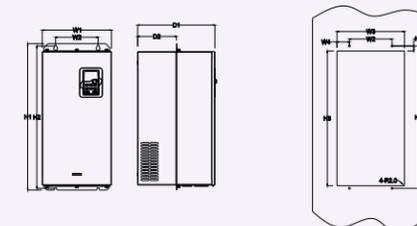
Flange installation of 220V 37~55kW inverters
Flange installation of 460V 37~110kW inverters

Flange installation dimension of 220V 37~55kW inverters (unit:mm)

| Power Rating | W1 | W2 | W3 | W4 | H1 | H2 | H3 | H4 | D1 | D2 | Installation Holes |
|--------------|-----|-----|-----|------|-----|-----|-----|----|-----|-----|--------------------|
| 37kW~55kW | 325 | 200 | 317 | 58.5 | 680 | 661 | 626 | 23 | 363 | 182 | 9.5 |

Flange installation dimension of 460V 1.5~110kW inverters (unit:mm)

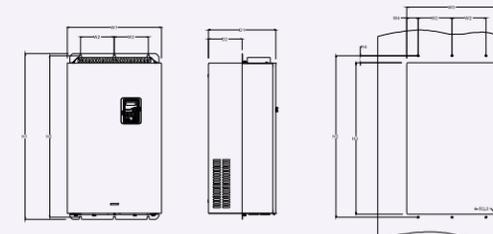
| Power Rating | W1 | W2 | W3 | W4 | H1 | H2 | H3 | H4 | D1 | D2 | Installation Holes |
|--------------|-----|-----|-----|------|-----|-----|-----|------|-------|------|--------------------|
| 1.5kW~2.2kW | 150 | 115 | 130 | 7.5 | 234 | 220 | 190 | 16.5 | 174.5 | 65.5 | 5 |
| 4kW~5.5kW | 170 | 131 | 150 | 9.5 | 292 | 276 | 260 | 10 | 181 | 79.5 | 6 |
| 7.5kW~11kW | 191 | 151 | 174 | 11.5 | 370 | 351 | 324 | 15 | 216.2 | 113 | 6 |
| 15kW~18.5kW | 250 | 210 | 234 | 12 | 375 | 356 | 334 | 10 | 216 | 108 | 6 |
| 22kW~30kW | 275 | 237 | 259 | 11 | 445 | 426 | 404 | 10 | 245 | 119 | 7 |
| 37kW~55kW | 270 | 130 | 261 | 65.5 | 555 | 540 | 516 | 17 | 325 | 167 | 7 |
| 75kW~110kW | 325 | 200 | 317 | 58.5 | 680 | 661 | 626 | 23 | 363 | 182 | 9.5 |



Flange installation of 575V 18.5~110kW inverters

Flange installation dimension of 575V 18.5~110kW inverters (unit:mm)

| Power Rating | W1 | W2 | W3 | W4 | H1 | H2 | H3 | H4 | D1 | D2 | Installation Holes |
|--------------|-----|-----|-----|------|-----|-----|-----|----|-----|-----|--------------------|
| 18.5kW~37kW | 270 | 130 | 261 | 65.5 | 555 | 540 | 516 | 17 | 325 | 167 | 7 |
| 45kW~110kW | 325 | 200 | 317 | 58.5 | 680 | 661 | 626 | 23 | 363 | 182 | 9.5 |

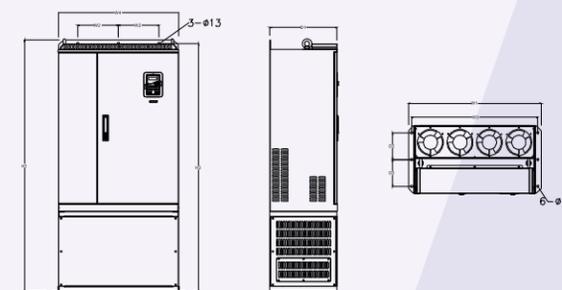


Flange installation of 460V 132G-200G/132P-220P kW inverters

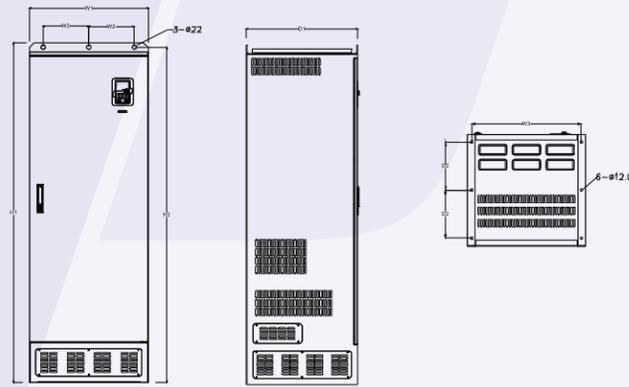
Flange installation dimension of 460V 132G-200G/132P-220P inverters (unit:mm)

| Power Rating | W1 | W2 | W3 | W4 | H1 | H2 | H3 | H4 | D1 | D2 | Installation Holes |
|--|-----|-----|-----|----|-----|-----|-----|----|-----|-------|--------------------|
| G type:132kW-200kW P type:132kW-220kW | 500 | 180 | 480 | 60 | 870 | 850 | 796 | 37 | 358 | 178.5 | 11 |

Installation Size for Floor Installation



Floor installation of 460V 220G-315G/250P-350P inverters



Floor installation of 460V 350G-500G/400P-500P inverters

Floor installation dimension of 460V 220G-500G inverters (unit:mm)

| Power Rating | W1 | W2 | W3 | W4 | H1 | H2 | D1 | D2 | Installation Holes |
|------------------------|-----|-----|-----|-----|------|------|-----|-----|--------------------|
| G/P type :220kW-315kW | 750 | 230 | 714 | 680 | 1410 | 1390 | 380 | 150 | 13/12 |
| G/P type: 350kW-500GkW | 620 | 230 | 573 | / | 1700 | 1678 | 560 | 240 | 22/12 |

Optional Parts

Flange Mounting Panel

Optional for inverters of 1.5~30kW in flange installation; not optional for inverters of 37~55kW in flange installation



Heat-releasing Hole

Inverter needs to derate when selecting a cover consult with the INVT technicians for the detailed information.



Installation Bracket for the Keypad

Use M3 screws or installation bracket to fix the keypad. The installation bracket of 1.5~30kW inverters are optional, others are standard.



Communication Card

PROFIBUS+Ethernet communication card
CANopen +Ethernet communication card



LCD Keypad

10 rows of DH displaying
Compatible with the LED keypad



Assistant Power (AC Single Phase 220V)

Provide for a safer and more convenient inverter debugging when the main power supply is power off(note as non-standard assistant power supply)

Reactor

| Model | Input reactor | DC reactor | Output reactor |
|-----------------|---------------|---------------|----------------|
| GD310-0R7G-2-UL | ACL2-2R2-4-UL | - | OCL2-2R2-4-UL |
| GD310-1R5G-2-UL | ACL2-004-4-UL | - | OCL2-004-4-UL |
| GD310-2R2G-2-UL | ACL2-7R5-4-UL | - | OCL2-7R5-4-UL |
| GD310-004G-2-UL | ACL2-011-4-UL | - | OCL2-011-4-UL |
| GD310-5R5G-2-UL | ACL2-015-4-UL | - | OCL2-015-4-UL |
| GD310-7R5G-2-UL | ACL2-022-4-UL | - | OCL2-022-4-UL |
| GD310-011G-2-UL | ACL2-030-4-UL | - | OCL2-030-4-UL |
| GD310-015G-2-UL | ACL2-037-4-UL | DCL2-037-4-UL | OCL2-037-4-UL |
| GD310-018G-2-UL | ACL2-045-4-UL | DCL2-045-4-UL | OCL2-045-4-UL |
| GD310-022G-2-UL | ACL2-055-4-UL | DCL2-055-4-UL | OCL2-055-4-UL |
| GD310-030G-2-UL | ACL2-075-4-UL | DCL2-075-4-UL | OCL2-075-4-UL |
| GD310-037G-2-UL | ACL2-090-4-UL | DCL2-090-4-UL | OCL2-090-4-UL |
| GD310-045G-2-UL | ACL2-110-4-UL | DCL2-110-4-UL | OCL2-110-4-UL |
| GD310-055G-2-UL | ACL2-1R5-4-UL | - | OCL2-1R5-4-UL |
| GD310-1R5G-4-UL | ACL2-2R2-4-UL | - | OCL2-2R2-4-UL |
| GD310-2R2G-4-UL | ACL2-004-4-UL | - | OCL2-004-4-UL |
| GD310-004G-4-UL | ACL2-5R5-4-UL | - | OCL2-5R5-4-UL |
| GD310-5R5G-4-UL | ACL2-7R5-4-UL | - | OCL2-7R5-4-UL |
| GD310-7R5G-4-UL | ACL2-011-4-UL | - | OCL2-011-4-UL |
| GD310-011G-4-UL | ACL2-015-4-UL | - | OCL2-015-4-UL |
| GD310-015G-4-UL | ACL2-018-4-UL | - | OCL2-018-4-UL |
| GD310-018G-4-UL | ACL2-022-4-UL | - | OCL2-022-4-UL |
| GD310-022G-4-UL | ACL2-030-4-UL | - | OCL2-030-4-UL |
| GD310-030G-4-UL | ACL2-037-4-UL | DCL2-037-4-UL | OCL2-037-4-UL |
| GD310-037G-4-UL | ACL2-045-4-UL | DCL2-045-4-UL | OCL2-045-4-UL |
| GD310-045G-4-UL | ACL2-055-4-UL | DCL2-055-4-UL | OCL2-055-4-UL |
| GD310-055G-4-UL | ACL2-075-4-UL | DCL2-075-4-UL | OCL2-075-4-UL |
| GD310-075G-4-UL | ACL2-110-4-UL | DCL2-090-4-UL | OCL2-110-4-UL |
| GD310-090G-4-UL | ACL2-110-4-UL | DCL2-132-4-UL | OCL2-110-4-UL |
| GD310-110G-4-UL | ACL2-132-4-UL | DCL2-132-4-UL | OCL2-132-4-UL |
| GD310-132G-4-UL | ACL2-160-4-UL | DCL2-160-4-UL | OCL2-160-4-UL |
| GD310-160G-4-UL | ACL2-200-4-UL | DCL2-220-4-UL | OCL2-200-4-UL |
| GD310-185G-4-UL | | | |
| GD310-200G-4-UL | | | |
| GD310-220G-4-UL | | | |
| GD310-250G-4-UL | | | |
| GD310-280G-4-UL | Standard | DCL2-280-4-UL | OCL2-250-4-UL |
| GD310-315G-4-UL | | DCL2-280-4-UL | OCL2-280-4-UL |
| GD310-350G-4-UL | | DCL2-315-4-UL | OCL2-315-4-UL |
| GD310-400G-4-UL | | DCL2-400-4-UL | OCL2-350-4-UL |
| GD310-400G-4-UL | Standard | DCL2-400-4-UL | OCL2-400-4-UL |
| GD310-500G-4-UL | | DCL2-500-4-UL | OCL2-500-4-UL |
| GD310-5R5P-4-UL | ACL2-004-4-UL | - | OCL2-004-4-UL |
| GD310-7R5P-4-UL | ACL2-5R5-4-UL | - | OCL2-5R5-4-UL |
| GD310-011P-4-UL | ACL2-7R5-4-UL | - | OCL2-7R5-4-UL |
| GD310-015P-4-UL | ACL2-011-4-UL | - | OCL2-011-4-UL |
| GD310-018P-4-UL | ACL2-015-4-UL | - | OCL2-015-4-UL |
| GD310-022P-4-UL | ACL2-018-4-UL | - | OCL2-018-4-UL |
| GD310-030P-4-UL | ACL2-022-4-UL | - | OCL2-022-4-UL |
| GD310-037P-4-UL | ACL2-030-4-UL | - | OCL2-030-4-UL |
| GD310-045P-4-UL | ACL2-037-4-UL | DCL2-037-4-UL | OCL2-037-4-UL |
| GD310-055P-4-UL | ACL2-045-4-UL | DCL2-045-4-UL | OCL2-045-4-UL |

Sales Network

| Model | Input reactor | DC reactor | Output reactor |
|-----------------|----------------|----------------|----------------|
| GD310-075P-4-UL | ACL2-075-4-UL | DCL2-075-4-UL | OCL2-075-4-UL |
| GD310-090P-4-UL | ACL2-090-4-UL | DCL2-090-4-UL | OCL2-090-4-UL |
| GD310-110P-4-UL | ACL2-132-4-UL | DCL2-132-4-UL | OCL2-132-4-UL |
| GD310-132P-4-UL | ACL2-160-4-UL | DCL2-160-4-UL | OCL2-160-4-UL |
| GD310-160P-4-UL | ACL2-200-4-UL | DCL2-200-4-UL | OCL2-200-4-UL |
| GD310-185P-4-UL | Standard | DCL2-280-4-UL | OCL2-250-4-UL |
| GD310-200P-4-UL | | OCL2-280-4-UL | |
| GD310-220P-4-UL | | OCL2-315-4-UL | |
| GD310-250P-4-UL | Standard | DCL2-315-4-UL | OCL2-315-4-UL |
| GD310-280P-4-UL | | DCL2-350-4-UL | OCL2-350-4-UL |
| GD310-315P-4-UL | | DCL2-500-4-UL | OCL2-500-4-UL |
| GD310-350P-4-UL | ACL2-022G-6-UL | DCL2-022G-6-UL | OCL2-022G-6-UL |
| GD310-400P-4-UL | ACL2-022G-6-UL | DCL2-030G-6-UL | OCL2-030G-6-UL |
| GD310-500P-4-UL | ACL2-030G-6-UL | DCL2-030G-6-UL | OCL2-030G-6-UL |
| GD310-018G-6-UL | ACL2-037G-6-UL | DCL2-037G-6-UL | OCL2-037G-6-UL |
| GD310-022G-6-UL | ACL2-045G-6-UL | DCL2-045G-6-UL | OCL2-045G-6-UL |
| GD310-030G-6-UL | ACL2-055G-6-UL | DCL2-055G-6-UL | OCL2-055G-6-UL |
| GD310-037G-6-UL | ACL2-075G-6-UL | DCL2-075G-6-UL | OCL2-075G-6-UL |
| GD310-045G-6-UL | ACL2-090G-6-UL | DCL2-090G-6-UL | OCL2-090G-6-UL |
| GD310-055G-6-UL | ACL2-110G-6-UL | DCL2-110G-6-UL | OCL2-110G-6-UL |
| GD310-075G-6-UL | | | |
| GD310-090G-6-UL | | | |
| GD310-110G-6-UL | | | |

- Note:
1. The rated derate voltage of the input reactor is 2%±15%.
 2. The power factor of the input side is above 90% after installing DC reactor.
 3. The rated derate voltage of the output reactor is 1%±15%.
 4. Above options are external, the customer should indicate when purchasing.



- INVT Sales & Service in 8 countries: Thailand, India, Indonesia, Russia, USA, Italy, Germany, Australia
- Sales and Service Partners in 61 countries

