SN200G Series Inverter

Selection Guide





Product Overview

SN200G Series has the following general functions:

- 1) Various voltage levels: it supports three voltage levels single phase 220V, three phase 220V, and three phase 380V.
- 2) Rich control methods: in addition to the speed sensor vector control, sensorless vector control, V/F control, it also supports V/F separation control.
- 3) Optional field bus: it supports two kinds of bus Modbus–RTU and CANlink.
- 4) Rich types of encoders: it supports differential encoder, open collector encoder, rotary transformer, etc..
- 5) Brand new sensorless vector control algorithm

The new SVC (sensorless vector control) brings better low-speed stability, stronger low-frequency load capacity, and the support for SVC torque control.

6) Strong background software: the background software can achieve the frequency converter parameters of the upload, download, real-time oscilloscope and other functions.



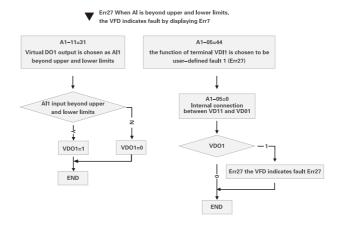
Power rate range: 0.75kW~400kW

Functional Features

| Function | Description | |
|--|--|--|
| Restore user parameters | This function supports the customer to save or restore the parameters of its own settings | |
| Display of customized parameters | Functional parameters to be displayed for user customization | |
| Display of revised parameters | The user can view the modified function parameters | |
| Fault processing options | According to the needs, the user can determine the operating mode of the frequency converter after a specific fault occurs: free stop, deceleration, stop, and continue to run. It is also possible to choose the frequency of the continuing operation. | |
| PID parameter switching | There are two sets of PID parameters, which can be switched by terminal switch or according to the deviation. | |
| PID feedback on loss detection | Setting the PID feedback on loss detection value to realize the protection of the PID during the running. | |
| DIDO positive and negative logic | c User-set positive and negative logic of DIDO | |
| DIDO response delay | The user sets the DIDO response delay time. | |
| Run timing | Support timing maximum 6500 minutes for runnning. | |
| Wireless remote control The extended wireless module is used to set and control the ren parameters. | | |
| DIDO response delay | The user sets the DIDO response delay time. | |
| Run timing | Support timing maximum 6500 minutes for runnning. | |
| Wireless remote control | The extended wireless module is used to set and control the remote parameters. | |

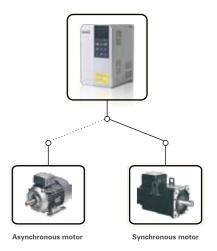
Virtual IO function

5 groups of virtual DIDO can be set. The status of terminal DI can be given directly by functional code or bound to corresponding Virtual DO function.



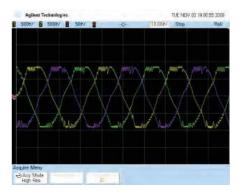
Multi motor switching

With 4 sets of motor parameters, the switching control among 4 motors or between synchronous motor and asynchronous motor can be realized.



Fast current limiting function

Fast current limiting function can avoid frequent overcurrent alarm of the VFD. When the current exceeds the current protection point, the fast current limiting function can quickly limit the current to the current protection point, so as to protect the device and avoid overcurrent alarm caused by sudden load or interference.



Flexible and practical analog input / output port

Each analog input (A11A13) is set respectively for 4 points of the curve, more flexibly in use.

Al1-Al3 can be corrected by factory before delivery or calibrated by user of the linear curve, and the accuracy after calibration is up to 20mV.

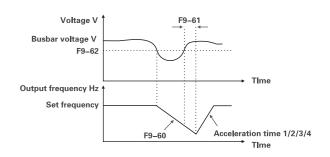
AO can be corrected by factory before delivery or calibrated by user of the linear curve, and the accuracy after calibration is up to 20mV.

A11-A13 can be used as a DI.

A13 is an isolated input port, which can be used as a PT00, PT1000 or + 10V input port.

Nonstop at instant outage

This function means that the VFD will not stop at the time of power outage. In case of instantaneous power failure or sudden voltage drop, the VFD reduces output speed and compensates the voltage reduction by feedback energy, so as to maintain the inverter running in a short time.



Technical specifications

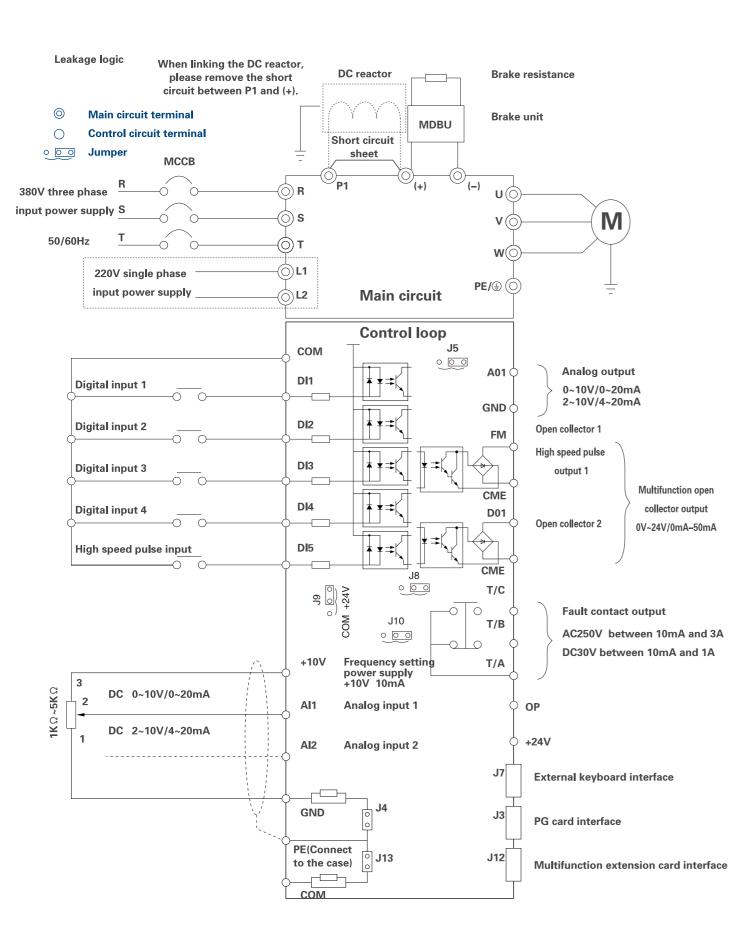
| Item | Specifications | | |
|--|---|-------------------------------------|--|
| | Vector control: 0–300Hz | | |
| Maximum frequency | V/F control: 0–3200Hz | | |
| | 0.5kHz – 16kHz | | |
| Carrier wave frequency | The carrier frequency can be automatically adjusted ac | cording to the load characteristics | |
| | Digital setting: 0.01Hz | | |
| Input frequency resolution | Analog setting: maximum frequency × 0.025% | | |
| | Open loop vector control (SVC) | | |
| Control mode | Closed loop vector control (FVC) | | |
| | Type G machine: 0.5Hz / 150% (SVC); 0Hz / 180 | 0% (FVC) | |
| Starting Torque | Type P machine: 0.5Hz / 100% | | |
| Speed adjusting range | 1:100(SVC) | 1:1000(FVC) | |
| Accuracy of speed stability | ± 0.5% (FVC | ± 0.02% (FVC) | |
| Accuracy of torque control | ± 5% (FVC) | | |
| 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Type G machine: 150% the rated current ,60s; 180% the | ne rated current, 3s. | |
| Overload capability | Type P machine: 120% the rated current, 60s; 150% th | ne rated current, 3s. | |
| Torque lifting | Automatic torque lifting; Manual torque lifting 0.1% - 30 | 0.0% | |
| V/F curve | Three types: straight line type; multipoint type; N sub s | square V/F curve | |
| V/F Separation | Two types: full separation, semi separation | | |
| Acceleration and deceleration | Straight line mode or acceleration and deceleration S curve mode. Four kinds of acceleration and deceleration time. | | |
| curve | Acceleration and deceleration time range 0.0–6500.0s | | |
| | DC braking frequency: 0.00Hz –maximum frequency | | |
| DC brake | Braking time: 0.0s-36.0s brake action | | |
| | Current value: 0.0%100.0% | | |
| Daint dynamia broka | Point moving frequency range: 0.00Hz-50.00Hz | | |
| Point dynamic brake | Point motion acceleration and deceleration time :0.00s-6500.0s | | |
| Simple PLC, multi speed | Up to 16 segments of speed operation through built-in PLC or control terminal | | |
| Build-in PID | A closed loop control system for convenient realization of process control | | |
| Automatic voltage regulation | When the voltage of the power grid is changed, the output voltage can still be kept | | |
| Control of over-voltage, overflow and stall. | Automatic limit of current and voltage during operation to prevent tripping off for frequent overflowing or over voltage. | | |
| Fast current limiting function | Minimize overcurrent failure and protect the normal operation of the frequency converter. | | |
| Torque limit and control | Excavator characteristics are to limit the torque automatically during the operation and prevent frequent overcurrent tripping, and the closed loop vector mode can realize torque control. | | |



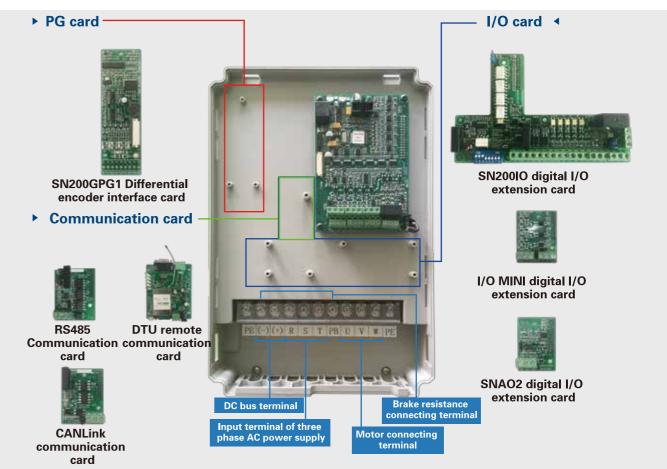
| | Item | Specifications |
|-------------------|----------------------------|---|
| | Command source | It can monitor the internal state of the inverter, control the terminal and the serial communication port. It can be switched in a variety of ways. |
| | Frequency source | 10 frequency sources: a given number, a given analog voltage, a given pulse, a given serial port. It can be switched in a variety of ways. |
| | Auxiliary frequency source | 10 kinds of auxiliary frequency sources. It can flexibly realize the auxiliary frequency tuning and frequency synthesis. |
| | | Standard:] |
| | | 5 digital input terminals, 1 of which supports high speed pulse input up to |
| | | 2 analog input terminals, 1 of which only supports 0-10V voltage input. |
| | Input terminal | 1 support 0-10V voltage input or 4-20mA current input |
| Operations | | [Expansion capacity:] |
| | | 5 digital input terminals |
| | | 1 analog input terminals support 0-10V voltage input. |
| | Output terminal | [Standard:] |
| | | 1 high speed pulse output terminals (optional open collector type) |
| | | Support output of square wave signal of 0-100kHz |
| | | 1 digital output terminal |
| | | 1 relay output terminal |
| | | 1 analog output terminal that supports current output of 0-20m or voltage output of 0-10V. |
| | | [Expansion capacity:] |
| | | 1 digital output terminal |
| | | 1 relay output terminal |
| | | 1 analog output terminal that supports current output of 0-20m or voltage |
| | Places of use | Indoor, free from sunlight, no dust, corrosive gases, flammable gases, oil mist, water vapor, drip or salt, etc. |
| Using environment | Altitude | Lower than 1000 meters. |
| | Ambient temperature | $-$ 10 $^{\circ}$ C $ +$ 40 $^{\circ}$ C (Derated if used at the ambient temperature of 40 $^{\circ}$ C $-$ 50 $^{\circ}$ C) |
| | Humidity | Less than 95%RH, without water condensing. |
| | Vibration | Less than 5.9m/s2 (0.6g) |
| | Storage temperature | −20° C─+60° C |



Product wiring diagram



Extension components



Optional accessories of SN200G frequency inverter

| Item | Model | Function | Mark |
|---------------------------------------|------------|--|---|
| External brake unit | SNBU | External brake unit of 18.5kW and above | Multi parallel connection is adopted above 75KW |
| Multi function extension card | SN200GPC1 | Five digital inputs can be added,one analog voltage input Al3 for isolated analog PT100, PT1000, one relay output, one digital output, one analog output, with RS485/CAN | Suitable for 3.7KW and above models |
| I/O extension card | SN200GIO1 | Three digital inputs can be added | Suitable for the full range of models |
| MODBUS communication card | SN485TX1 | RS 485 communication adapter with isolation | Suitable for the full range of models |
| CANLink communication card | SN200GCAN1 | Differential rotary encoder interface card, adaptable to 5V power supply | Suitable for the full range of models |
| Differential encoder interface card | SN200GPG1 | Suitable for rotary encoder interface card, adaptable to 5V power supply | Suitable for the full range of models |
| Rotary transformer interface card | SN200GPG2 | It is suitable for rotary encoder, excitation frequency 10Hz, interface DB9. | Suitable for the full range of models |
| Open collector encoder interface card | SN200GPG3 | Open collector encoder interface card with 1:1 frequency output, 15V power adapter | Suitable for the full range of models |
| External LCD operation panel | SNKE | External LCD display and operation keyboard | Suitable for SN general series |
| Extended cable | SNCAB | Outer elongation line | Standard 3 meters |
| Remote communication card | SNDTU | 3G / 4G wireless remote control module | Suitable for 3.7KW and above models |
| Output relay extension card | / | Expandable multifunction relay output | 1 |
| Water supply card | 1 | Constant pressure water supply control of multichannel water pump | 1 |
| Injection card | / | Special control card for injection molding machine | / |

Terminal descriptions

1) Main Circuit terminal description for single-phase frequency inverter

| Terminal marking | Name | Description |
|---------------------|---|--|
| L1, L2 | Input terminal of single-phase power | Contact poin of single– phase 220V AC power |
| (+), (–) | Positive/negative terminals of DC bus | Input point of DC bus |
| (+), PB | Connection terminal of brake resistance | Connect brake resistance |
| U, V, W | Output terminal of convertor | Connect three–phase motor |
| PE∖⊕ | Earthing terminal | Earthing terminal |

2) Main Circuit terminal description for three-phase frequency inverter

| Terminal marking | Name | Description |
|---------------------|--|--|
| R、S、T | Input terminal of three–phase power | Connection point of AC input three–phase power |
| (+), (–) | Positive/negative terminals of DC bus | Input point of DC bus and brake unit |
| (+), PB | Connection terminal of brake resistance | Connect brake resistance |
| P1, (+) | Connection terminal of external DC reactor | Connection point of external DC reactor |
| U, V, W | Output terminal of convertor | Connect three–phase motor |
| PE∖⊕ | Earthing terminal | Earthing terminal |

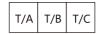
Control terminals and connecting wiring

The terminal layout of the control loop is shown as the below diagram:

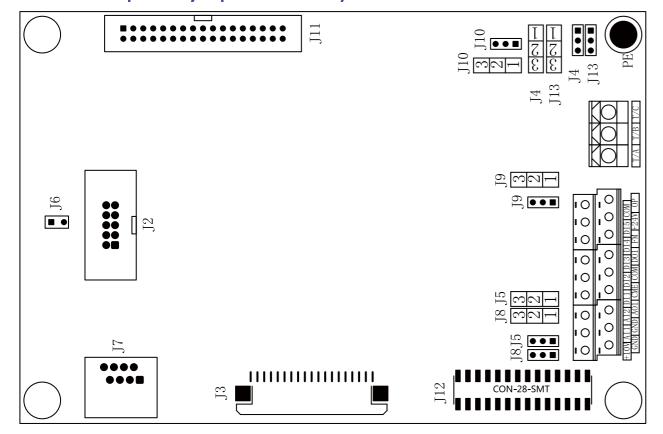
(Note: there is no short contact between SN200G converter CME and COM, OP and + 24, and the user selects CME and OP connection mode respectively through J10 and J).



Control circuit terminal layout

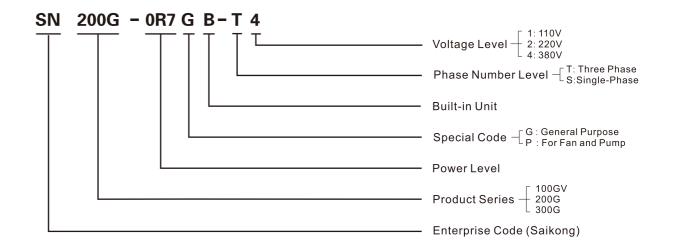


Functional description of jumper and auxiliary terminals

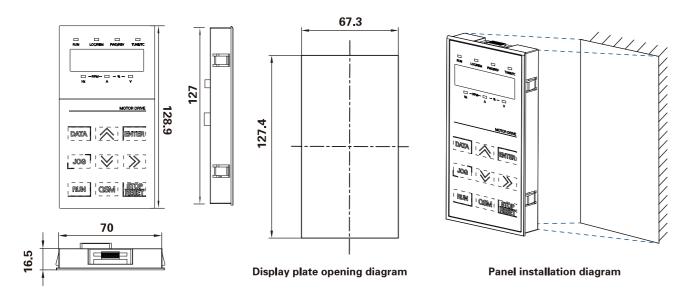


| Jumper marking | | Name | Description |
|---|--|--|---|
| Auxiliary terminal | J12 | Multi-function expansion card port | 28–core terminal, connect with optional cards (I/O expansion card,PLC card, various bus cards, etc) |
| | J4 | Select jumper to connect PE and GND | Select if PE connects with GND. In the occasion with interference, connect PE with GND to enhance anti–interference. No connection by default. (As shown in Figure 3–6, short circuit of 1–2 is connection between PE and GND, short circuit of 2–3 is no connection between PE and GND) |
| | J3 | PG card port | Optional: OC, differentiation, rotary transformer, etc |
| | J7 | External keyboard port | External keyboard |
| | J13 | Select jumper to connect PE and GND | Select if PE connects with GND. In the occasion with interference,connect PE with GND to enhance anti–interference. No connection by default. (As shown in Figure 3–6, short circuit of 1–2 is connection between PE and GND, short circuit of 2–3 is no connection between PE and GND) |
| JUMPER | J5 | AO1 analog output selection | Decide output type of analog output terminal AO1 is voltage or current output. Voltage output by default. (As shown in Figure 3–6, short circuit of 1–2 is voltage output, short circuit of 2–3 is current output) Output voltage range: 0V–10V Output current range: 0mA –20mA |
| J8 Al2 analog input selection input by detail | Decide input type of analog input terminal AO1 is voltage or current input. Voltage input by default. (As shown in Figure 3–6, short circuit of 1–2 is voltage input, short circuit of 2–3 is current input) Input voltage range: DC 0V–10V Input current range: 0mA –20mA | | |
| | J9 | | OP terminal connects +24V or COM through J9 jumper. +24V connection by default. (As shown in Figure 3–6, short circuit of 1–2 is OP and +24V connection, short circuit of 2–3 is OP and COM connection) If using external signal to drive DI1~DI5, OP needs to connect with external power, and pull out J9 jumper |
| | J10 | Select jumper to connect CME and COM | Select if CME connects with COM. No connection by default. (As shown in Figure 3–6, short circuit of 1–2 is connection between CME and COM, short circuit of 2–3 is no connection between CME and COM) |

Model Descriptions



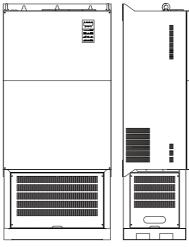
Terminal descriptions

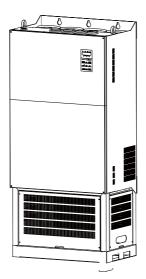


Reactor

The reactor can change the power factor, avoid the damage to the rectifier bridge caused by large capacity transformer inputting too big current. It can avoid the damage to the rectifier circuit caused by the sudden change of the voltage of the power grid or the harmonic produced by the phase control load.

| Frequency inverter model | DC reactor | Output reactor |
|--------------------------|--------------|----------------|
| SN200G-7R5G/011P-4 | _ | OCL2-7R5-4 |
| SN200G-011G/015P-4 | _ | OCL2-011-4 |
| SN200G-015G/018P-4 | _ | OCL2-015-4 |
| SN200G-018G/022P-4 | - | OCL2-018-4 |
| SN200G-022G/030P-4 | _ | OCL2-022-4 |
| SN200G-030G/037P-4 | _ | OCL2-030-4 |
| SN200G-037G/045P-4 | DCL2-037-4 | OCL2-037-4 |
| SN200G-045G/055P-4 | DCL2-045-4 | OCL2-045-4 |
| SN200G-055G/075P-4 | DCL2-055-4 | OCL2-055-4 |
| SN200G-075G/090P-4 | DCL2-075-4 | OCL2-075-4 |
| SN200G-090G/110P-4 | DCL2-090-4 | OCL2-090-4 |
| SN200G-110G/132P-4 | DCL2-110-4 | OCL2-110-4 |
| SN200G-132G/160P-4 | DCL2-132-4 | OCL2-132-4 |
| SN200G-160G/185P-4 | DCL2-160-4 | OCL2-160-4 |
| SN200G-185G/200P-4 | DCL2-200-4 | OCL2-200-4 |
| SN200G-200G/220P-4 | DCL2-200-4 | OCL2-200-4 |
| SN200G-220G/250P-4 | DCL2-250-4 | OCL2-250-4 |
| SN200G-250G/280P-4 | DCL2-250-4 | OCL2-250-4 |
| SN200G-280G/315P-4 | DCL2-280-4 | OCL2-280-4 |
| SN200G-315G/350P-4 | DCL2-315-4 | OCL2-315-4 |
| SN200G-350G/400P-4 | DCL2-350-4 | OCL2-350-4 |
| SN200G-400G-4 | DCL2-400-4 | OCL2-400-4 |
| SN200G-500G-4 | DCL2-500-4 | OCL2-500-4 |





SAFESAVE

High-performance Vector Inverter



Super expansion capability. It can extend three lines of relay input, two analog inputs, and up to nine sets of digital outputs.

A variety of communication protocol supports, Canlink, Modbus and etc.

High-end Configuration, top branded components: Infineon / Fuji IGBT Cornell Dubilier / Jianghai Capacitor American TI IC KOHSHIN / LEM Sensor German Epcos Capacitor

32 bit DSP master chip supplied by American Tl.

SVC support. High performance of closed loop vector control.

Excellent Heat Dissipation