

# NL1000 Series User's Manual

## 1. Preface

Thank you for choosing NL1000 series of high-performance, Simple inverter. Diagram of the operating instructions, is to facilitate the description, may be slightly different with the product.

Please note that this manual will be handed the hands of end users, and retain for future maintenance, use and If in doubt, please contact with our company or agent of the Company to get in touch, we will be happy to serve you.

## 2. Nameplate Description

### MODEL: NL1000-1R5G-2

INPUT: 1PH 220V 50Hz/60Hz

OUTPUT: 3PH 220V 7.0A 150% 60S

FREQ RANGE: 0.1-400Hz 1.5KW



1105080001-3051



Model: NL1000 - 1R5G - 2

Voltage range :

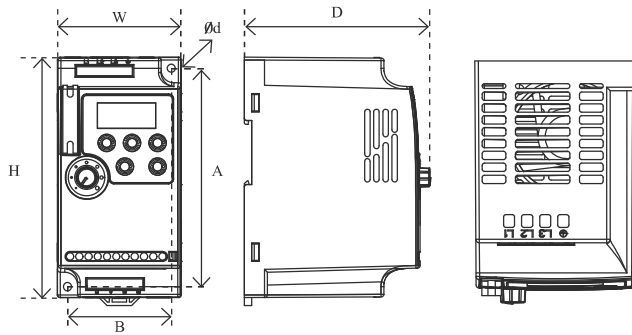
2: 1PH AC220V INPUT

4: 3PH AC 380V INPUT

Inverter capacity:01R5means 1.5kW

NL1000 Series

## 3. Dimensions



**Note:** Support for standard 35 mm rail mounting

Unit: mm

| Model                        | W  | H   | D     | A   | B  | Ød  |
|------------------------------|----|-----|-------|-----|----|-----|
| NL1000-00R4G2--NL1000-01R5G2 | 68 | 132 | 102   | 120 | 57 | 4.5 |
| NL1000-02R2G2                | 72 | 142 | 112.2 | 130 | 61 | 4.5 |
| NL1000-00R7G4--NL1000-02R2G4 |    |     |       |     |    |     |

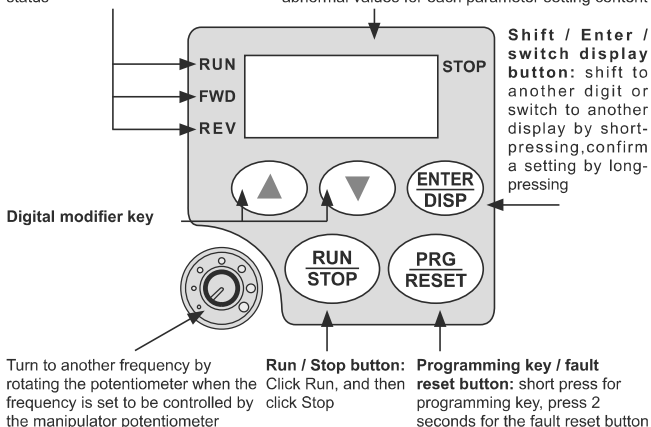
## 4. Keyboard Description

### RUN/FWD/REV/STOP:

Status indicator:Various operation status

### Display area: displays:

set frequency, operating frequency, current, and abnormal values for each parameter setting content



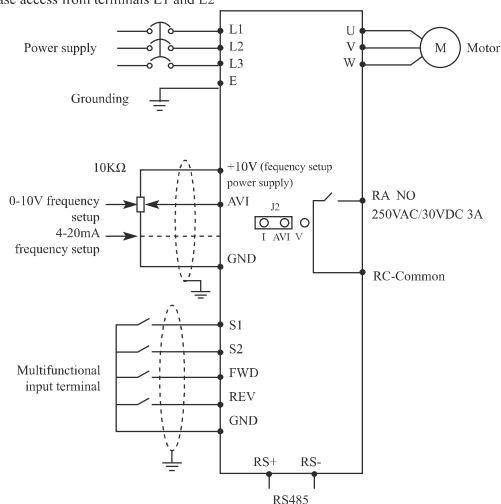
## 5.Product Specifications

| Items          |                          | NL1000                                                                                                                                                  |
|----------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply   | Rated voltage, Frequency | 1PH/3PH AC 220V 50/60Hz; 3PH AC380V 50/60Hz                                                                                                             |
|                | Voltage Range            | 220V: 170V~240V; 380V:330V~440V                                                                                                                         |
| Output         | Voltage Range            | 220V: 0~220V; 380V:0~380V                                                                                                                               |
|                | Frequency Range          | 0.10~400.00Hz                                                                                                                                           |
| Control method |                          | V/F control, Space vector control.                                                                                                                      |
| Indication     |                          | Operating status/Alarm definition/interactive guidance: eg, frequency setting, the output frequency/current, DC bus voltage, the temperature and so on. |

| Items                       |                                        | NL1000                                                                                                                                                                                                                                                                         |
|-----------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control Specifications      | Output Frequency Range                 | 0.10Hz~400.00Hz                                                                                                                                                                                                                                                                |
|                             | Frequency Setting Resolution           | Digital input : 0.1 Hz, analog input: 0.1% of maximum output frequency                                                                                                                                                                                                         |
|                             | Output Frequency Accuracy              | 0.1Hz                                                                                                                                                                                                                                                                          |
|                             | V/F Control                            | Setting V/F curve to satisfy various load requirements.                                                                                                                                                                                                                        |
|                             | Torque Control                         | Auto increase: auto raise torque by loading condition; Manual increase:enable to set 0.0~20.0% of raising torque.                                                                                                                                                              |
|                             | Multifunctional Input Terminal         | Four multi-function input terminals, realizing functions including fifteen section speed control, program running, four-section acceleration/deceleration speed switch, UP/DOWN function and emergency stop and other functions                                                |
|                             | Multifunctional Output Terminal        | 1 multi-function output terminals for displaying of running, zerospeed, counter, external abnormality, program operation and other information and warnings.                                                                                                                   |
|                             | Acceleration/deceleration Time Setting | 0~999.9s acceleration/deceleration time can be set individually.                                                                                                                                                                                                               |
| Other Functions             | PID Control                            | Built-in PID control                                                                                                                                                                                                                                                           |
|                             | RS485                                  | Standard RS485 communication function (MODBUS)                                                                                                                                                                                                                                 |
|                             | Frequency Setting                      | Analog input:0 to 10V, 4 to 20mA can be selected; Digital input: Input using the setting dial of the operation panel or RS485or UP/DOWN.<br>Note: AVI terminals can be used to select an analog voltage input (0-10V) and analog current input (4-20mA) through the switch J2. |
|                             | Multi-speed                            | Four multifunction input terminals, 15 section speed can be set                                                                                                                                                                                                                |
|                             | Automatic voltage regulation           | Automatic voltage regulation function can be selected                                                                                                                                                                                                                          |
|                             | Counter                                | Built-in 2 group of counters                                                                                                                                                                                                                                                   |
| Protection/Warning Function | Overload                               | 150%, 60second (Constant torque)                                                                                                                                                                                                                                               |
|                             | Over Voltage                           | Over voltage protection can be set.                                                                                                                                                                                                                                            |
|                             | Under Voltage                          | Under voltage protection can be set.                                                                                                                                                                                                                                           |
|                             | Other Protections                      | Output shortcircuit, over current, and parameter lock and so on.                                                                                                                                                                                                               |
| Environment                 | Ambient Temperature                    | -10℃ to 40℃ (non-freezing)                                                                                                                                                                                                                                                     |
|                             | Ambient Humidity                       | Max. 95% (non-condensing)                                                                                                                                                                                                                                                      |
|                             | Altitude                               | Lower than 1000m                                                                                                                                                                                                                                                               |
|                             | Vibration                              | Max. 0.5G                                                                                                                                                                                                                                                                      |
| Structure                   | Cooling Mode                           | Forced air cooling                                                                                                                                                                                                                                                             |
|                             | Protective Structure                   | IP 20                                                                                                                                                                                                                                                                          |
| Installation                | Mode                                   | Wall-mounted or standard 35MM rail mounting                                                                                                                                                                                                                                    |

## 6.Wiring

Note: When using a single-phase power supply, please access from terminals L1 and L2



Note: AVI terminals can be used to select an analog voltage input (0-10V) and analog current input (4-20mA) through the switch J2.

## 7.Parameters

| Function          | Parameters | Name                         | Setting Range | Minimum Setting increments | Initial value |
|-------------------|------------|------------------------------|---------------|----------------------------|---------------|
| Monitor functions | P000       | Main display data selection  | 0-32          | 1                          | 1             |
|                   | P001       | Display the set frequency    | Read only     | ----                       | ----          |
|                   | P002       | Display the output frequency | Read only     | ----                       | ----          |
|                   | P003       | Display the output current   | Read only     | ----                       | ----          |
|                   | P004       | Display the motor speed      | Read only     | ----                       | ----          |

| Function          | Parameters | Name                                         | Setting Range                                                                                                                                                                                                     | Minimum Setting increments | Initial value     |
|-------------------|------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------|
| Monitor functions | P005       | Display the DC bus voltage value             | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P006       | Display the temperature of inverter          | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P007       | Display PID                                  | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P010       | Alarm record 1                               | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P011       | Alarm record 2                               | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P012       | Alarm record 3                               | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P013       | Alarm record 4                               | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P014       | The frequency setting in the last alarm      | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P015       | The output frequency in last alarm           | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P016       | The output current in last alarm             | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P017       | The output voltage in last alarm             | Read only                                                                                                                                                                                                         | -----                      | -----             |
|                   | P018       | The output DC bus voltage in last alarm      | Read only                                                                                                                                                                                                         | -----                      | -----             |
| Basic functions   | P100       | Digital frequency setting                    | 0.00—Maximum frequency                                                                                                                                                                                            | 0.1                        | 0.0               |
|                   | P101       | Frequency setting selection                  | 0: Digital frequency setting (P100)<br>1: Analog voltage (0—10VDC)<br>2: Analog current(0—20mADC)<br>3: Setting dial (Operation panel)<br>4 UP/DOWN frequency setting<br>5: RS485 communication frequency setting | 1                          | 3                 |
|                   | P102       | Start signal selection                       | 0: Operation panel (FWD/REV/STOP)<br>1: I/O terminal<br>2: Communication (RS485)                                                                                                                                  | 1                          | 0                 |
|                   | P103       | “stop” key lock operation selection          | 0: “Stop” key lock mode invalid<br>1: “Stop” key lock mode valid                                                                                                                                                  | 1                          | 1                 |
|                   | P104       | Reverse rotation prevention selection        | 0: Reverse rotation disallowed<br>1: Reverse rotation allowed                                                                                                                                                     | 1                          | 1                 |
|                   | P105       | Maximum frequency                            | Minimum frequency~400.00Hz                                                                                                                                                                                        | 0.1                        | 50.0              |
|                   | P106       | Minimum frequency                            | 0.00~maximum frequency                                                                                                                                                                                            | 0.1                        | 0.00              |
|                   | P107       | Acceleration time 1                          | 0~999.9s                                                                                                                                                                                                          | 0.1                        | Depends on models |
|                   | P108       | Deceleration time 1                          | 0~999.9s                                                                                                                                                                                                          | 0.1                        |                   |
|                   | P109       | V/F maximum voltage                          | V/F intermediate voltage ~ 500.0V                                                                                                                                                                                 | 0.1                        | Depends on models |
|                   | P110       | V/F base frequency                           | V/F intermediate frequency ~ max. frequency                                                                                                                                                                       | 0.1                        | 50.00             |
|                   | P111       | V/F intermediate voltage                     | V/F minimum voltage ~ V/F maximum voltage                                                                                                                                                                         | 0.1                        | Changing          |
|                   | P112       | V/F intermediate frequency                   | V/F minimum frequency ~ V/F base frequency                                                                                                                                                                        | 0.01                       | 2.50              |
|                   | P113       | V/F minimum voltage                          | 0~V/F intermediate voltage                                                                                                                                                                                        | 0.1                        | 15.0              |
|                   | P114       | V/F minimum frequency                        | 0~V/F intermediate frequency                                                                                                                                                                                      | 0.1                        | 1.25              |
|                   | P115       | Carrier frequency                            | 1.0K-15.0K                                                                                                                                                                                                        | 0.1                        | Changing          |
|                   | P116       | Automatic carrier line up                    | Reserved                                                                                                                                                                                                          | 1                          | 0                 |
|                   | P117       | Initialization of parameters                 | 8: Initialization of Factory Setting                                                                                                                                                                              | 1                          | 0                 |
|                   | P118       | Parameter lock                               | 0: Unlock parameters<br>1: Lock up parameters                                                                                                                                                                     | 1                          | 0                 |
|                   | P200       | Start mode selection                         | 0: regular start<br>1: restart after inspection                                                                                                                                                                   | 1                          | 0                 |
|                   | P201       | Stop mode selection                          | 0: deceleration to a stop<br>1: coasting                                                                                                                                                                          | 1                          | 0                 |
|                   | P202       | Starting frequency                           | 0.10~10.00Hz                                                                                                                                                                                                      | 0.01                       | 0.5               |
|                   | P203       | Stopping frequency                           | 0.10~10.00Hz                                                                                                                                                                                                      | 0.01                       | 0.5               |
|                   | P204       | DC injection brake operation current (start) | 0~150% rated motor current                                                                                                                                                                                        | 1%                         | 100%              |
|                   | P205       | DC injection brake operation time (start)    | 0~25.0S                                                                                                                                                                                                           | 0.1                        | 0                 |
|                   | P206       | DC injection brake operation current (stop)  | 0~150% rated motor current                                                                                                                                                                                        | 1%                         | 100%              |
|                   | P207       | DC injection brake operation time (stop)     | 0~25.0S                                                                                                                                                                                                           | 0.1                        | 0                 |
|                   | P208       | Torque boost                                 | 0~20.0%                                                                                                                                                                                                           | 1                          | 0%                |
|                   | P209       | Rated motor voltage                          | 0~500.0V                                                                                                                                                                                                          | 0.1                        | Changing          |
|                   | P210       | Rated motor current                          | 0~current of system                                                                                                                                                                                               | 0.1                        | Changing          |

| Function        | Parameters  | Name                                | Setting Range                                                                                                                                                                                                                                                                                                                                       | Minimum Setting increments | Initial value |
|-----------------|-------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| Basic functions | P211        | No load current ratio of motor      | 0~100%                                                                                                                                                                                                                                                                                                                                              | 0.1                        | 40%           |
|                 | P212        | Rated motor rotation speed          | 0~6000r/min                                                                                                                                                                                                                                                                                                                                         | 1                          | 1420          |
|                 | P213        | Number of motor poles               | 0~20                                                                                                                                                                                                                                                                                                                                                | 2                          | 4             |
|                 | P214        | Rated motor slip                    | 0~10.00Hz                                                                                                                                                                                                                                                                                                                                           | 0.1                        | 2.50          |
|                 | P215        | Rated motor frequency               | 0~400.00Hz                                                                                                                                                                                                                                                                                                                                          | 0.1                        | 50.00         |
|                 | P216        | Resistance of stator                | 0~100Ω                                                                                                                                                                                                                                                                                                                                              | 0.1                        | 0             |
|                 | P217        | Resistance of rotor                 | 0~100Ω                                                                                                                                                                                                                                                                                                                                              | 0.1                        | 0             |
|                 | P218        | Self inductance of rotor            | 0~1.000H                                                                                                                                                                                                                                                                                                                                            | 0.1                        | 0             |
|                 | P219        | Mutual inductance of rotor          | 0~1.000H                                                                                                                                                                                                                                                                                                                                            | 0.1                        | 0             |
| I/O functions   | P300        | AV1 minimum voltage input           | 0~AV maximum voltage                                                                                                                                                                                                                                                                                                                                | 0.1                        | 0             |
|                 | P301        | AV1 maximum voltage input           | AV minimum voltage~10V                                                                                                                                                                                                                                                                                                                              | 0.1                        | 10.0          |
|                 | P302        | AV1 input filter time               | 0~25.0S                                                                                                                                                                                                                                                                                                                                             | 0.1                        | 1.0           |
|                 | P303        | AV1 minimum current input           | 0~AI maximum current                                                                                                                                                                                                                                                                                                                                | 0.1                        | 4.0           |
|                 | P304        | AV1 maximum current input           | AI minimum current input~20mA                                                                                                                                                                                                                                                                                                                       | 0.1                        | 20.0          |
|                 | P305        | AV1 input filter time               | 0~25.0S                                                                                                                                                                                                                                                                                                                                             | 0.1                        | 2.5           |
|                 | P306        | Reserved                            | 0~FOV maximum voltage                                                                                                                                                                                                                                                                                                                               | 0.1                        | 0             |
|                 | P307        | Reserved                            | FOV maximum voltage output~10V                                                                                                                                                                                                                                                                                                                      | 0.1                        | 10.0          |
|                 | P310        | Frequency of low analog             | 0~600.00                                                                                                                                                                                                                                                                                                                                            | 0.1                        | 0.00          |
|                 | P311        | Direction of low analog             | 0/1                                                                                                                                                                                                                                                                                                                                                 | 1                          | 0             |
|                 | P312        | Frequency of high analog            | 0~600.00                                                                                                                                                                                                                                                                                                                                            | 0.1                        | 50.00         |
|                 | P313        | Direction of high analog            | 0/1                                                                                                                                                                                                                                                                                                                                                 | 1                          | 0             |
|                 | P314        | Analog input reverse selection      | 0/1                                                                                                                                                                                                                                                                                                                                                 | 1                          | 0             |
|                 | P315        | Input terminal FWD (0~32)           | 0: Invalid<br>1: Jog                                                                                                                                                                                                                                                                                                                                | 1                          | 6             |
|                 | P316        | Input terminal REV (0~32)           | 2: Jog Forward<br>3: Jog reverse<br>4: Forward/ reverse                                                                                                                                                                                                                                                                                             | 1                          | 7             |
|                 | P317        | Input terminal S1 (0~32)            | 5: Run<br>6: Forward<br>7: Reverse<br>8: Stop<br>9: Multi-speed 1<br>10: Multi-speed 2<br>11: Multi-speed 3<br>12: Multi-speed 4                                                                                                                                                                                                                    | 1                          | 18            |
|                 | P318        | Input terminal S2 (0~32)            | 13: Acceleration/Deceleration terminal 1                                                                                                                                                                                                                                                                                                            | 1                          | 9             |
|                 | P319        | Reserved                            | 14: Acceleration/Deceleration terminal 2                                                                                                                                                                                                                                                                                                            | 1                          |               |
|                 | P320        | Reserved                            | 15: Frequency increase signal (UP)                                                                                                                                                                                                                                                                                                                  | 1                          |               |
|                 | P321 (0~32) | Reserved                            | 16: Frequency decrease signal (DOWN)                                                                                                                                                                                                                                                                                                                | 1                          |               |
|                 | P322 (0~32) | Reserved                            | 17: Emergency stop signal<br>18: Inverter reset signal<br>19: PID in running<br>20: PLC in running<br>21: Start signal for timer 1<br>22: Start signal for timer 2<br>23: Counter pulse signal<br>24: Counter reset signal<br>25: Memory clear<br>26: Start winding operation                                                                       | 1                          |               |
|                 | P323        | Reserved                            | 0: Invalid<br>1: In running<br>2: Frequency reached<br>3: Alarm<br>4: Zero speed<br>5: Frequency 1 reached<br>6: Frequency 2 reached<br>7: Acceleration<br>8: Deceleration<br>9: Indication for under voltage<br>10: Timer 1 reached<br>11: Timer 2 reached<br>12: Indication for completion of phase<br>13: Indication for completion of procedure | 1                          |               |
|                 | P324        | Reserved                            | 14: PID maximum<br>15: PID minimum<br>16: 4~20mA disconnection<br>17: Overload 18: Over torque<br>26: Winding operation completed<br>27: Counter reached<br>28: Intermediate counter reached<br>29: Water supply by constant voltage                                                                                                                | 1                          |               |
|                 | P325        | Alarm output terminal RA, RC (0~32) | "1" turn on<br>"0" turn off                                                                                                                                                                                                                                                                                                                         | 1                          | 03            |

| Function              | Parameters | Name                                              | Setting Range                                                                                                                                                                                                                            | Minimum Setting increments | Initial value |
|-----------------------|------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| I/O functions         | P326       | Reserved                                          | 0: Frequency output<br>1: current output<br>2: Dc bus voltage<br>3: Ac voltage<br>4: Pulse output, 1pulse/ Hz<br>5: 2pulses/Hz<br>6: 3 pulses/Hz<br>7: 6 pulses/Hz                                                                       | 1                          |               |
|                       | P327       | Reserved                                          |                                                                                                                                                                                                                                          | 1                          |               |
| Secondary application | P400       | Jog frequency setting                             | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 5.00          |
|                       | P401       | Acceleration time 2                               | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P402       | Deceleration time 2                               | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P403       | Acceleration time 3                               | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P404       | Deceleration time 3                               | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P405       | Acceleration time 4/Jog acceleration time         | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P406       | Deceleration time 4/Jog deceleration time         | 0~999.9s                                                                                                                                                                                                                                 | 0.1S                       | 10.0          |
|                       | P407       | Designated value of counter                       | 0~999.9s                                                                                                                                                                                                                                 | 1                          | 100           |
|                       | P408       | Intermediate value of counter                     | 0~999.9s                                                                                                                                                                                                                                 | 1                          | 50            |
|                       | P409       | Limitation of acceleration torque                 | 0~200%                                                                                                                                                                                                                                   | 1%                         | 150%          |
|                       | P410       | Limitation of constant speed torque               | 0~200%                                                                                                                                                                                                                                   | 1%                         | 00            |
|                       | P411       | Over voltage prevention selection in deceleration | 0/1                                                                                                                                                                                                                                      | 1                          | 1             |
|                       | P412       | Automatic Voltage regulation selection            | 0~2                                                                                                                                                                                                                                      | 1                          | 1             |
|                       | P413       | Automatic- energy-saving selection                | 0~100%                                                                                                                                                                                                                                   | 1%                         | 00            |
|                       | P414       | DC Braking voltage                                | Depends on models                                                                                                                                                                                                                        | 0.1                        | Changing      |
|                       | P415       | Braking duty                                      | 40~100%                                                                                                                                                                                                                                  | 1                          | 50%           |
|                       | P416       | Restart after instant power off                   | 0~1                                                                                                                                                                                                                                      | 1                          | 0             |
|                       | P417       | Allowable time of power cut                       | 0~10s                                                                                                                                                                                                                                    | 1                          | 5.0S          |
|                       | P418       | Flank restart Current limited level               | 0~200%                                                                                                                                                                                                                                   | 1                          | 150%          |
|                       | P419       | Flank restart time                                | 0~10s                                                                                                                                                                                                                                    | 1                          | 10            |
|                       | P420       | Fault restart times                               | 0~5s                                                                                                                                                                                                                                     | 1                          | 0             |
|                       | P421       | Delay time for restart after fault                | 0~100                                                                                                                                                                                                                                    | 2                          | 2             |
|                       | P422       | Over torque action                                | 0~3                                                                                                                                                                                                                                      | 1                          | 0             |
|                       | P423       | Over torque detection level                       | 0~200%                                                                                                                                                                                                                                   | 1                          | 00            |
|                       | P424       | Over torque detection time                        | 0~20.0S                                                                                                                                                                                                                                  | 0.1                        | 00            |
|                       | P425       | Reaching Frequency 1                              | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 100           |
|                       | P426       | Reaching Frequency 2                              | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 5.0           |
|                       | P427       | Timer 1 setting                                   | 0~10.0s                                                                                                                                                                                                                                  | 0.1                        | 0             |
|                       | P428       | Timer 2 setting                                   | 0~100s                                                                                                                                                                                                                                   | 1                          | 0             |
|                       | P429       | Constant-speed torque limiting time               | 0~999.9s                                                                                                                                                                                                                                 | 0.1                        | Changing      |
|                       | P430       | Width of arrival of frequency in hysteretic loop  | 0.00~2.00                                                                                                                                                                                                                                | 0.1                        | 0.50          |
|                       | P431       | Jump frequency 1                                  | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 0             |
|                       | P432       | Jump frequency 2                                  | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 0             |
|                       | P433       | Jump frequency hysteresis loop width              | 0.00~2.00                                                                                                                                                                                                                                | 0.1                        | 0.50          |
|                       | P434       | UP/DOWN frequency step                            | 0~10.00Hz                                                                                                                                                                                                                                | 0.1                        | 0.1           |
|                       | P435       | UP/DOWN frequency Memory options                  | 0: memory<br>1: No Memory                                                                                                                                                                                                                | 1                          | 0             |
| PLC operation         | P500       | PLC memory mode                                   | 0~1                                                                                                                                                                                                                                      | 1                          | 0             |
|                       | P501       | PLC starting mode                                 | 0~1                                                                                                                                                                                                                                      | 1                          | 0             |
|                       | P502       | PLC running mode                                  | 0: PLC stops after running for one cycle<br>1: PLC stop mode, it stops after running for one cycle<br>2: PLC cycle running<br>3: PLC stop mode, cycle running mode<br>4: PLC operates at the last frequency after running for one cycle. | 1                          | 0             |
|                       | P503       | Multi-speed 1                                     | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 20.0          |
|                       | P504       | Multi-speed 2                                     | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 10.0          |
|                       | P505       | Multi-speed 3                                     | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 20.0          |
|                       | P506       | Multi-speed 4                                     | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 25.0          |
|                       | P507       | Multi-speed 5                                     | 0.00~maximum frequency                                                                                                                                                                                                                   | 0.1                        | 30.0          |

| Function             | Parameters | Name                               | Setting Range                                                                                                                                                                       | Minimum Setting Increments | Initial value |
|----------------------|------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| PLC operation        | P508       | Multi-speed 6                      | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 35.0          |
|                      | P509       | Multi-speed 7                      | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 40.0          |
|                      | P510       | Multi-speed 8                      | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 45.0          |
|                      | P511       | Multi-speed 9                      | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 50.0          |
|                      | P512       | Multi-speed 10                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P513       | Multi-speed 11                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P514       | Multi-speed 12                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P515       | Multi-speed 13                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P516       | Multi-speed 14                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P517       | Multi-speed 15                     | 0.00~maximum frequency                                                                                                                                                              | 0.1                        | 10.0          |
|                      | P518       | PLC operation time 1               | 0~9999s                                                                                                                                                                             | 1S                         | 100           |
|                      | P519       | PLC operation time 2               | 0~9999s                                                                                                                                                                             | 1S                         | 100           |
|                      | P520       | PLC operation time 3               | 0~9999s                                                                                                                                                                             | 1S                         | 100           |
|                      | P521       | PLC operation time 4               | 0~9999s                                                                                                                                                                             | 1S                         | 100           |
|                      | P522       | PLC operation time 5               | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P523       | PLC operation time 6               | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P524       | PLC operation time 7               | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P525       | PLC operation time 8               | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P526       | PLC operation time 9               | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P527       | PLC operation time 10              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P528       | PLC operation time 11              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P529       | PLC operation time 12              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P530       | PLC operation time 13              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P531       | PLC operation time 14              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P532       | PLC operation time 15              | 0~9999s                                                                                                                                                                             | 1S                         | 0             |
|                      | P533       | PLC operation direction            | 0~9999                                                                                                                                                                              | 1                          | 0             |
| PID operation        | P600       | PID starting mode                  | 0: PID disable<br>1: PID start<br>2: PID start by external terminal                                                                                                                 | 1                          | 0             |
|                      | P601       | PID operation mode selection       | 0: Negative feedback mode<br>1: Positive feedback mode                                                                                                                              | 1                          | 0             |
|                      | P602       | PID action set point               | 0: figure mode (P604)<br>1: AVI (0-10V)<br>2: AVI (0-20mA)                                                                                                                          | 1                          | 0             |
|                      | P603       | PID feedback value selection       | 0: AVI (0-10V)<br>1: AVI (0-20mA)<br>2: Reserverd<br>3: Reserverd                                                                                                                   | 1                          | 0             |
|                      | P604       | PID figure target value setting    | 0.0~100.0%                                                                                                                                                                          | 0.1%                       | 50%           |
|                      | P605       | PID upper limit alarm value        | 0~100.0%                                                                                                                                                                            | 1%                         | 100%          |
|                      | P606       | PID lower limit alarm value        | 0~100.0%                                                                                                                                                                            | 1%                         | 0%            |
|                      | P607       | PID proportional band              | 0.0~200.0%                                                                                                                                                                          | 0.1%                       | 100%          |
|                      | P608       | PID integral time                  | 0.0~200.0 S.0 means closed                                                                                                                                                          | 0.1s                       | 0.3s          |
|                      | P609       | PID differential time              | 0.00.0~20.00 S.0 means closed                                                                                                                                                       | 0.1s                       | 0.0           |
|                      | P610       | PID action step-length             | 0.00~1.00Hz                                                                                                                                                                         | 0.1                        | 0.5Hz         |
|                      | P611       | PID standby frequency              | 0.00~120.0Hz (0.00Hz) 0.00Hz means sleep function is closed                                                                                                                         | 0.1                        | 0.0Hz         |
|                      | P612       | PID standby duration               | 0~200s                                                                                                                                                                              | 1S                         | 10s           |
|                      | P613       | PID wake-up value                  | 0~100%                                                                                                                                                                              | 1%                         | 0             |
|                      | P614       | PID corresponding value of display | 0~9999                                                                                                                                                                              | 1                          | 9999          |
|                      | P615       | PID diqit of display               | 1~5                                                                                                                                                                                 | 1                          | 4             |
|                      | P616       | PID decimal digits of display      | 0~4                                                                                                                                                                                 | 1                          | 2             |
|                      | P617       | PID upper limit frequency          | 0~max. frequency                                                                                                                                                                    | 0.1                        | 48.00         |
|                      | P618       | PID lower limit frequency          | 0~max. frequency                                                                                                                                                                    | 0.1                        | 20.00         |
|                      | P619       | PID working mode                   | 0: Always work (PID function open)<br>1: When feedback reaches upper limit (P605), it will work at Min-frequency. When feedback reaches lower limit (P606), PID will begin to work. | 1                          | 0             |
| RS-485 Communication | P700       | Communication speed                | 0: 4800bps<br>1: 9600 bps<br>2: 19200 bps<br>3: 38400 bps                                                                                                                           |                            | 1             |
|                      | P701       | Communication mode                 | 0: 8N1 FOR ASC<br>1: 8E1 FPR ASC<br>2: 8O1 FOR ASC<br>3: 8N1 FOR RTU<br>4: 8E1 FOR RTU<br>5: 8O1 FOR RTU                                                                            |                            | 0             |
|                      | P702       | Communication address              | 0~240                                                                                                                                                                               | 1                          | 0             |

| Function             | Parameters | Name                                                  | Setting Range                            | Minimum Setting increments | Initial value |
|----------------------|------------|-------------------------------------------------------|------------------------------------------|----------------------------|---------------|
| Advanced application | P800       | Advanced application parameter lock                   | 0: Locked<br>1: Unlocked                 | 1                          | 1             |
|                      | P801       | System 50Hz/60Hz setting                              | 0~50Hz 1~60Hz                            | 1                          | 1             |
|                      | P802       | Constant torque or variable torque selection          | 0: Constant torque<br>1: Variable torque | 1                          | 1             |
|                      | P803       | Over-voltage protection setting                       | changing                                 | 0.1                        | changing      |
|                      | P804       | Under-voltage protection setting                      | changing                                 | 0.1                        | changing      |
|                      | P805       | Over-temperature protection setting                   | 40~120℃                                  | 0.1                        | 85/95℃        |
|                      | P806       | Current display filter time                           | 0~10.0                                   | 0.1                        | 2.0           |
|                      | P807       | 0-10V analogue output low end calibration coefAlient  | 0-9999                                   | 1                          | -             |
|                      | P808       | 0-10V analog output high end calibration coefAlient   | 0-9999                                   | 1                          | -             |
|                      | P809       | 0-20mA analogue output low end calibration coefAlient | 0-9999                                   | 1                          | -             |
|                      | P810       | 0-20mA analog output high end calibration coefAlient  | 0-9999                                   | 1                          | -             |
|                      | P811       | Compensation frequency point for dead time            | 0.00~maximum frequency                   | 0.01                       | 0.00          |
|                      | P812       | UP/DOWN frequency Memory options                      | 0: memory<br>1: No Memory                | 1                          | 1             |

## 8.Troubleshooting

| Operation Panel Indication | Name                               | Possible fault reason                                                                                                                                                                                                                                                                                                                               | Corrective action                                                                                                                                                                                                                                                                             |
|----------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OC0 / UC0                  | Over current during stop           | 1: Inverter fault                                                                                                                                                                                                                                                                                                                                   | Please contact your sales representative                                                                                                                                                                                                                                                      |
| OC1/UC1                    | Over current during acceleration   | 1: Acceleration time is too short<br>2: V/F curve is not set correctly<br>3: Motor or motor wire have short circuit to the ground<br>4: The torque boost is set too fast<br>5: The input voltage is too low<br>6: Directly start up the running motor<br>7: The inverter setting is not correct<br>9: The inverter fails                            | 1: Increase acceleration time<br>2: Correctly set V/F curve.<br>3: Check the insulation of motor and motor wire.<br>4: Reduce the value of torque boost.<br>5: Check input voltage<br>6: Check the load<br>7: Set tracing startup<br>8: Enlarge capacity of inverter<br>9: Sent for repairing |
| OC2 / UC2                  | Over current during deceleration   | 1: Decelerate time is too short<br>2: Inverter capacity is inappropriately set<br>3: Whether there is any disturbing                                                                                                                                                                                                                                | 1: Increase deceleration time<br>2: Enlarge inverter capacity<br>3: Solve disturbing resource                                                                                                                                                                                                 |
| OC3 / UC3                  | Over current during constant speed | 1: The insulation of motor and motor wire is not good<br>2: Load fluctuation<br>3: Fluctuation of input voltage and the voltage is low<br>4: Inverter capacity is inappropriately set<br>5: Whether there is a large power motor starting up and leads the input voltage goes down<br>6: Whether there is a disturbing resource to disturb inverter | 1: Check the insulation of motor and motor wire<br>2: Check load situation and mechanical lubrication<br>3: Check input voltage<br>4: Enlarge the capacity of inverter<br>5: Increase capacity of transformer<br>6: Solve disturbing resource                                                 |
| OU0                        | Over voltage during stop           | 1: The deceleration time is short<br>2: Inverter capacity incorrectly set<br>3: Disturbing                                                                                                                                                                                                                                                          | 1: Check the power supply voltage<br>2: Sent for repairing                                                                                                                                                                                                                                    |
| OU1                        | Over voltage during acceleration   | 1: Abnormal power supply<br>2: Peripheral circuitry is incorrectly set (switch control on or off, etc.)<br>3: Inverter fault                                                                                                                                                                                                                        | 1: Check the power supply voltage<br>2: Do not use power supply switch to control the inverter on or off<br>3: Sent for repairing                                                                                                                                                             |
| OU2                        | Over voltage during deceleration   | 1: Power supply voltage abnormal<br>2: Energy feedback load<br>3: Braking resistor incorrectly set                                                                                                                                                                                                                                                  | 1: Check the power supply voltage<br>2: Install braking unit and resistance<br>3: Affirm resistance setting again                                                                                                                                                                             |

| Operation Panel Indication | Name                                | Possible fault reason                                                                                                                                                                                                                              | Corrective action                                                                                                                                                                                                                                                              |
|----------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OU3                        | Over voltage during constant speed  | 1: Decelerate time is too short<br>2: Power supply voltage abnormal<br>3: Over load<br>4: Braking resistor incorrectly set<br>5: Braking parameter is incorrectly set                                                                              | 1: Increase deceleration time<br>2: Check the power supply voltage<br>3: Check braking unit and resistance<br>4: Set Braking resistor over again<br>5: Correctly set parameter, e.g. braking tube voltage, etc                                                                 |
| LU0                        | Under voltage during stop           | 1: Power supply voltage abnormal<br>2: Phase missing                                                                                                                                                                                               | 1: Check the power supply voltage<br>2: Check power supply and switch whether there is phase missing                                                                                                                                                                           |
| LU1                        | Under voltage during acceleration   | 1: Power supply voltage abnormal<br>2: Phase missing<br>3: There is large load power start up in the input                                                                                                                                         | 2: Check whether peripheral setting bad connection leads phase missing<br>3: Please use independent power supply                                                                                                                                                               |
| LU2                        | Under voltage during deceleration   |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| LU3                        | Under voltage during constant speed |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OL0 during stop            | Inverter overload                   | 1: Overload<br>2: Acceleration time is too short<br>3: Torque boost is too fast<br>4: V/F curve incorrectly set<br>5: Under voltage of input<br>6: Before motor stops, inverter starts up<br>7: Fluctuation or blocking in loading                 | 1: Reduce the load weight or replace larger capacity inverter<br>2: Increase acceleration time<br>3: Reduce torque boost rate<br>4: Set V/F curve over again<br>5: Check input voltage, increase inverter capacity<br>6: Adopt tracing startup mode<br>7: Check load condition |
| OL1 during acceleration    |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OL2 during deceleration    |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OL3 during constant speed  |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OT0 during stop            | Motor overload                      | 1: The motor for use under overload<br>2: Acceleration time is too short<br>3: Motor protection setting is too small<br>4: V/F curve is incorrectly set<br>5: Torque boost is too fast<br>6: Bad motor insulation<br>7: Motor setting is too small | 1: Reduce the load weight.<br>2: Increase acceleration time<br>3: Increase protection setting<br>4: Correctly set V/F curve<br>5: Reduce torque boost rate<br>6: Check motor insulation and replace motor<br>7: Use larger inverter or motor                                   |
| OT1 during acceleration    |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OT2 during deceleration    |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| OT3 during constant speed  |                                     |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                |
| ES                         | Emergency stop                      | 1: Inverter is in Emergency stop condition                                                                                                                                                                                                         | 1: After release Emergency stop, start up as regular procedure                                                                                                                                                                                                                 |
| CO                         | Communication error                 | 1: Communication line connection has problem<br>2: Communication parameter is incorrectly set<br>3: Transmission format is wrong                                                                                                                   | 1: Perform wiring of the RS-485 terminals properly<br>2: Set parameter over again<br>3: Check data transmission format                                                                                                                                                         |
| 20                         | 4-20mA wire broken                  | 1: Terminal is loose; signal input line is bad connected                                                                                                                                                                                           | 1: Perform wiring of the 4-20mA terminals properly.                                                                                                                                                                                                                            |
| Pr                         | Parameter write error               | Parameter setting is wrong                                                                                                                                                                                                                         | After stopping operation, make parameter setting.                                                                                                                                                                                                                              |
| Err                        | Wrong parameter group               | The parameter does not exist or the factory setting parameter                                                                                                                                                                                      | Quit this parameter                                                                                                                                                                                                                                                            |