INNOVATION MATTERS
ELECTRONICS

NL ED200A

USER MANUAL

BRIEF INTRODUCTION

Naqsh-e-Lasani Electronics specializes in manufacturing, installation/commissioning, software programming, troubleshooting, repairing and maintenance of VFDs (Variable Frequency Drives).

We provide innovative technological solution for a wide range of clients in the manufacturing and industrial processes with the support of our team of qualified experts. We are manufacturing our own brand VFDs with rating 0.75kw to 630kw for various general as well as specific industrial applications. Our Famous Products are NL E5, NL ED200A, NL-E100, NL G5, NL3000, NL V6-M, NL D5-A, NL i580, NL-B5, NL C5.

WHY NEL?

- Based on International Standards
- Experience from Different Industries and Applications
- User Specific Requirements
- Technical Expertise
- High Quality Products
- Perfessional Services
- Customer Support & Feedback

Preface

Thanks for choosing our products.

NLED200A series variable-frequency drive (VFD) is newly-designed vector-type VFD by our company for controlling asynchronous AC inductance motors. Through adopting the most advanced speed sensor-less vector control technology and DSP control system, as well as enhancing the reliability and adaptability to the environment, our product is armed with optimized functions, flexible applications and stable performances.

The vector control performance of NLED200A series VFD is as outstanding as that of the leading sophisticated VFDs in worldwide market. Its integrated speed and torque control can satisfy various application demands, in the meantime, its excellent anti-trip performance and strong adaptability to worse grid, temperature, humidity and dust guarantees its outstanding reliability and stability.

NLED200A series VFD adopts modular to fulfill various customized needs. The powerful speed control, torque control, simple PLC, flexible input/output terminals, pulse frequency reference and traverse control can satisfy various requirements from complicated drives to reduce system cost and improve system reliability.

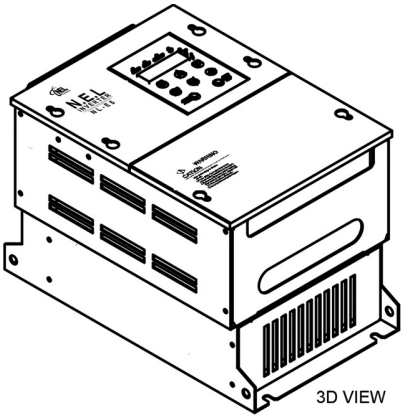
NLED200A series VFD adopts electromagnetic compatibility design to ensure strong anti-electromagnetic interference capacity while realizing low noise and weakening electromagnetic interference in the application sites.

This manual presents installation and configuration, parameters setup, fault diagnoses and daily maintenance and relative precautions to customers. Please read this manual carefully before installation to ensure NLED200A series VFD is installed and operated properly to give full play to its excellent performance.

Our company reserves the right to update the information of our products without prior notice.

Contents

4.0KW - 5.5KW



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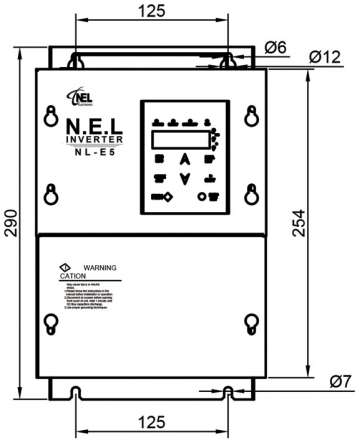

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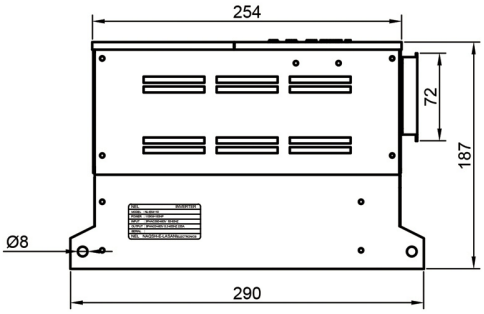

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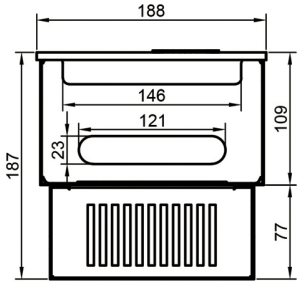

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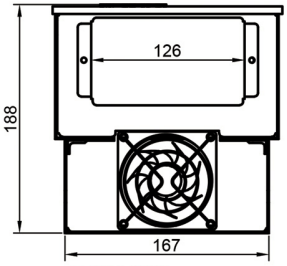

REAR VIEW

Front View

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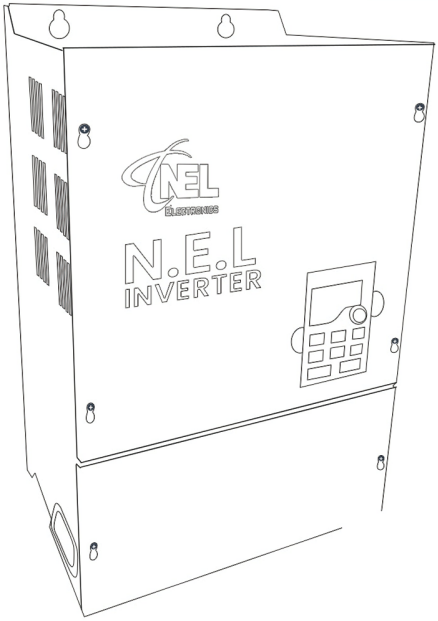

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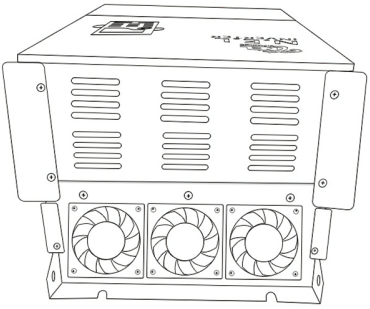

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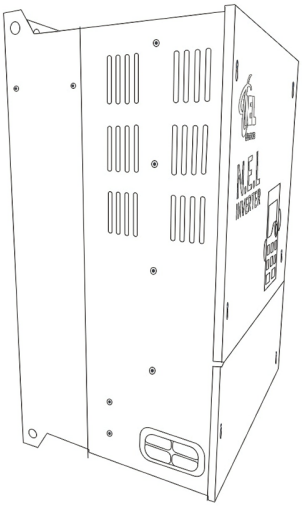

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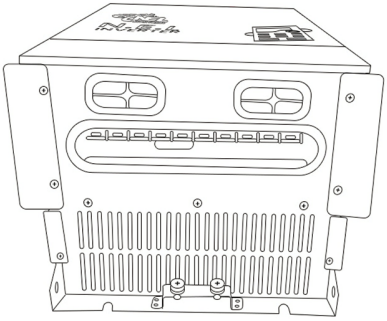

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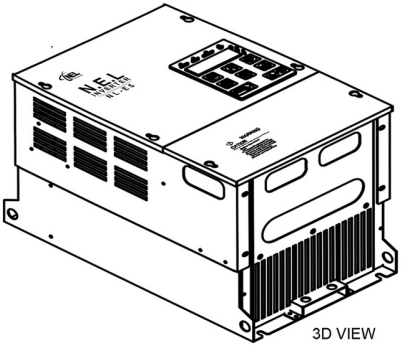
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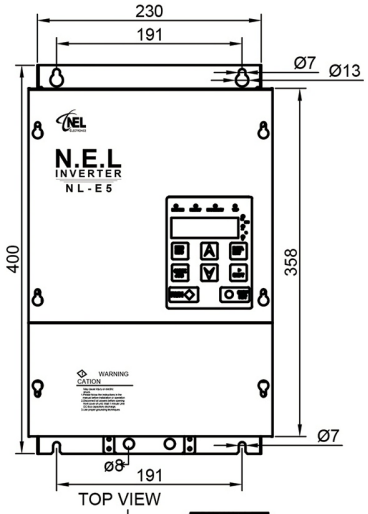
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400
358
Ø7
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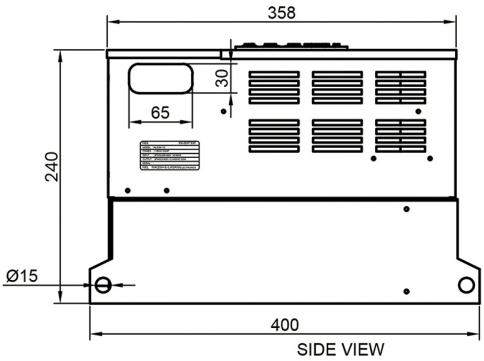
191
TOP VIEW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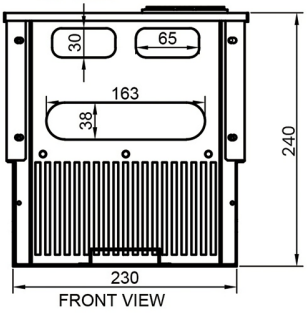
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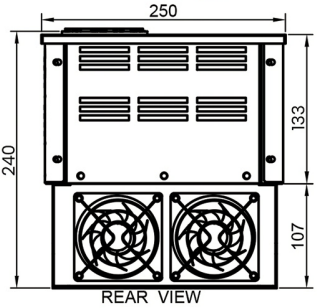
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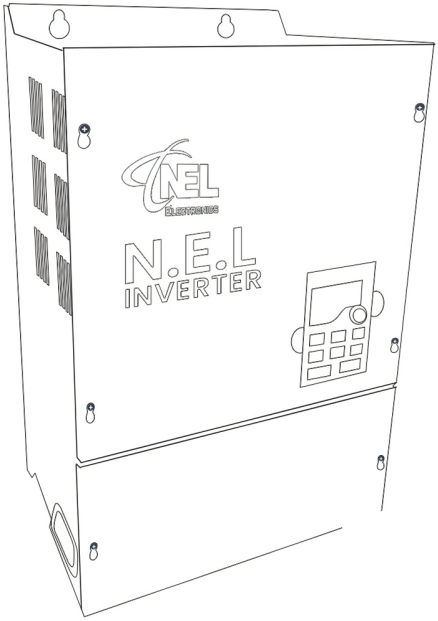
Front View

37KW - 45KW



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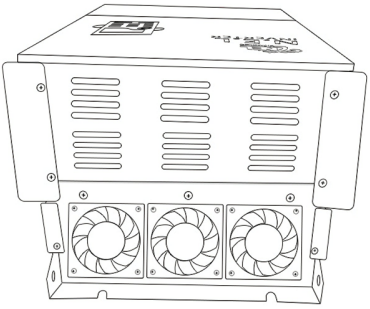

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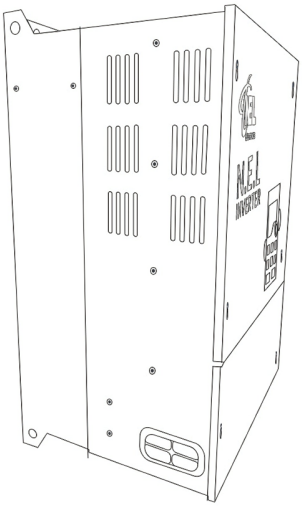

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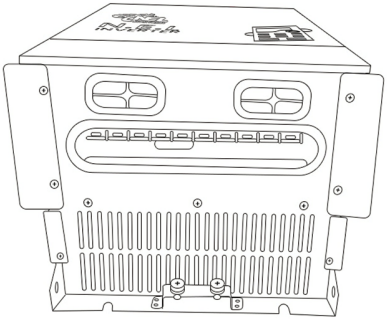

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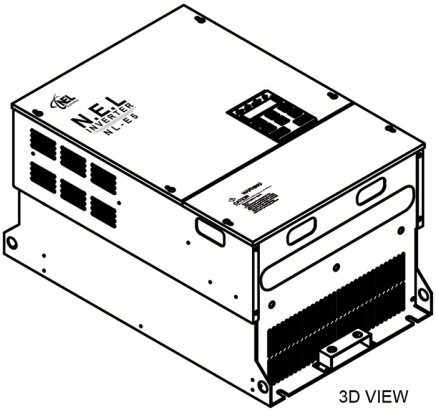

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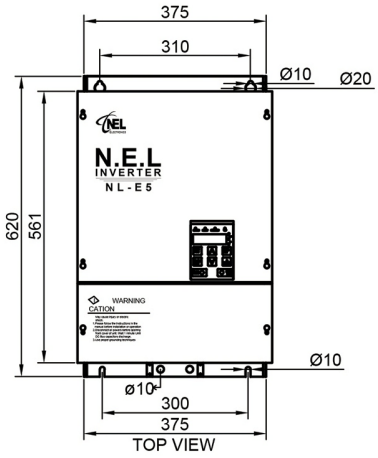

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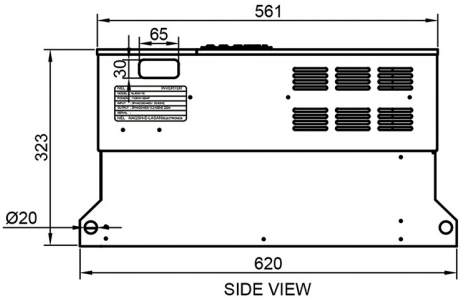

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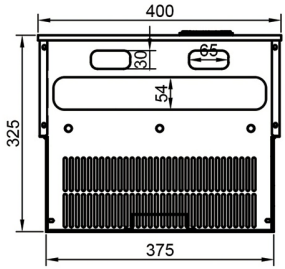

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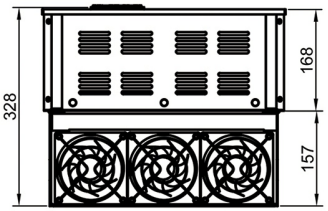

REAR VIEW

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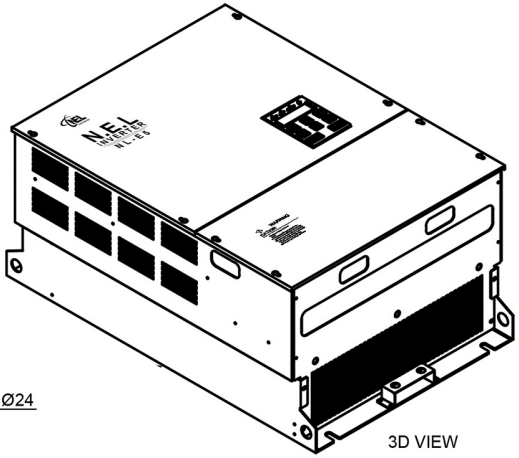

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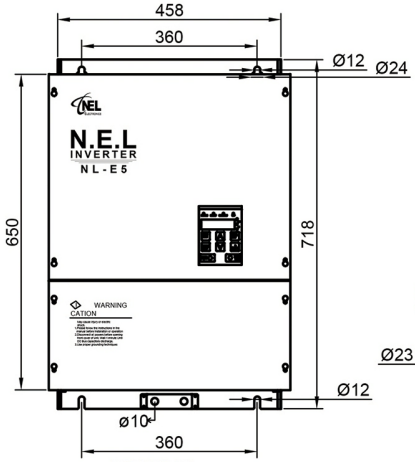

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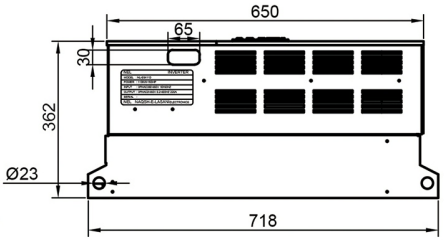

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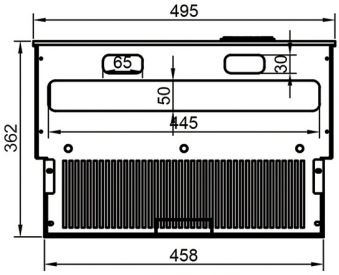

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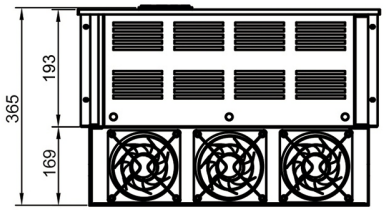
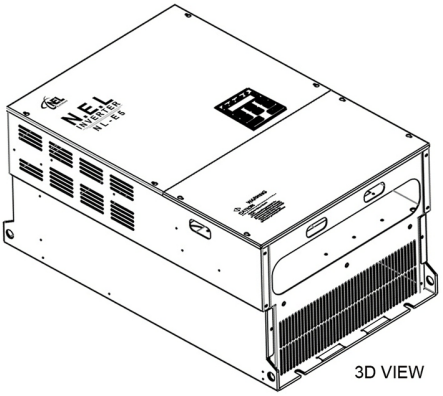


REAR VIEW

160KW - 220KW



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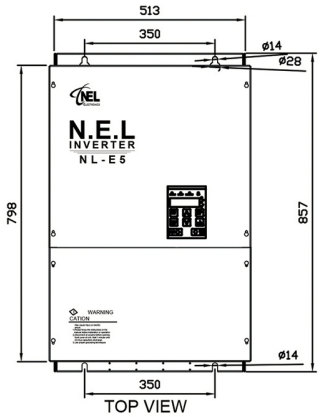

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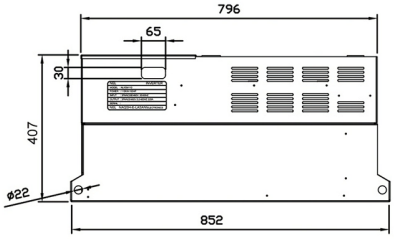

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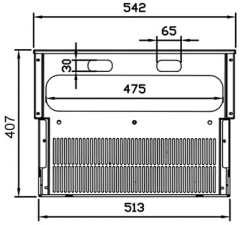

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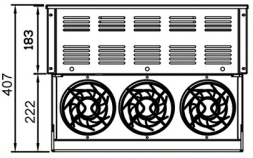
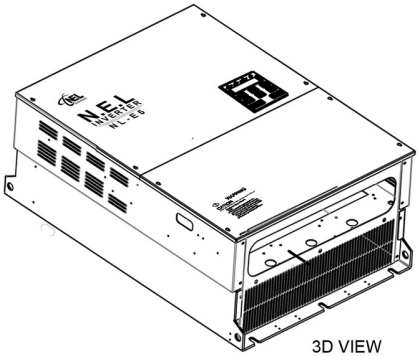


REAR VIEW

250KW - 315KW



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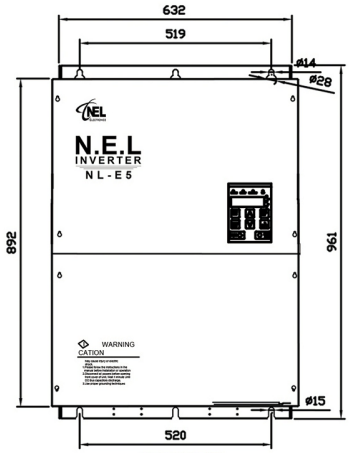

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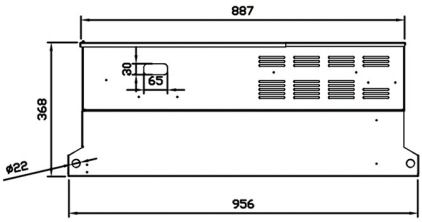

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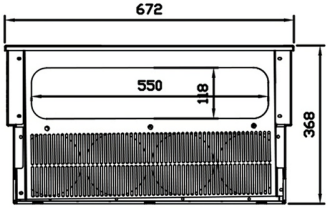

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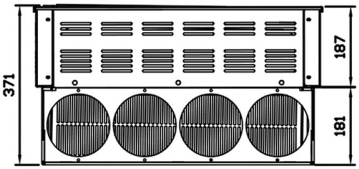
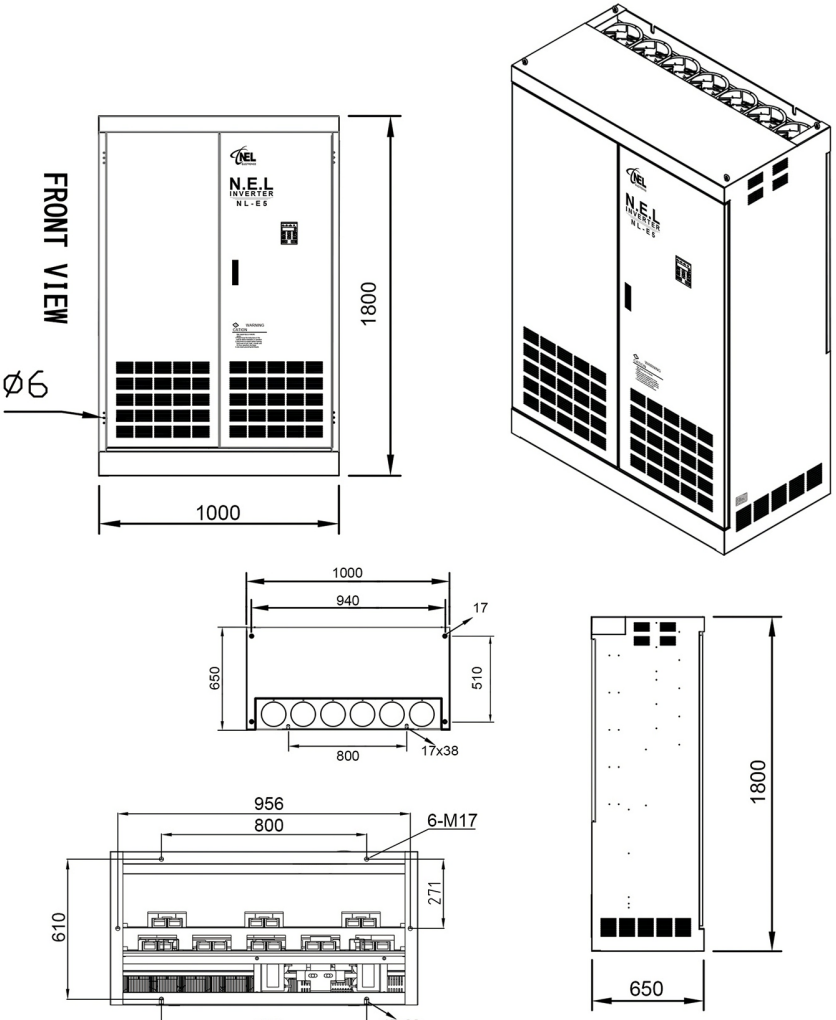


REAR VIEW

355KW - 450KW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INVERTER
NL-E5
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1000
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800
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6-M17
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271
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17x38
1800
650

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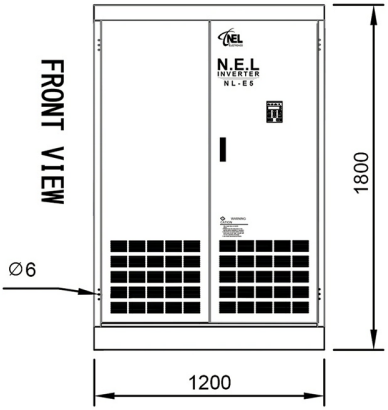
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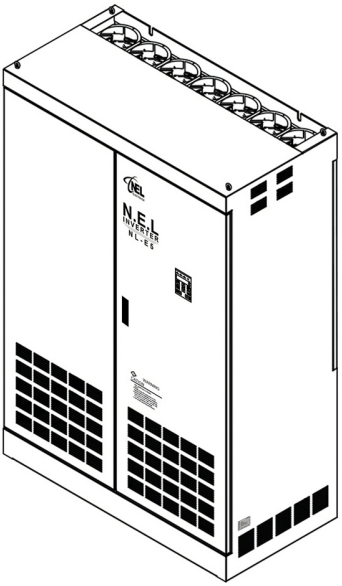
INVERTER
NL-E5
1800
Ø6
1200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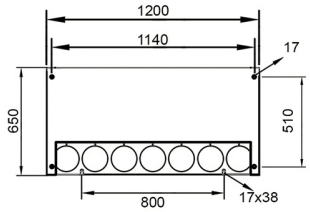
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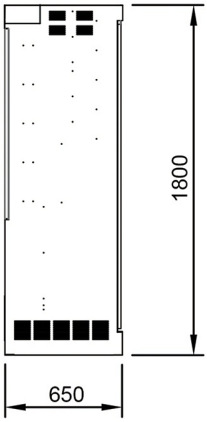
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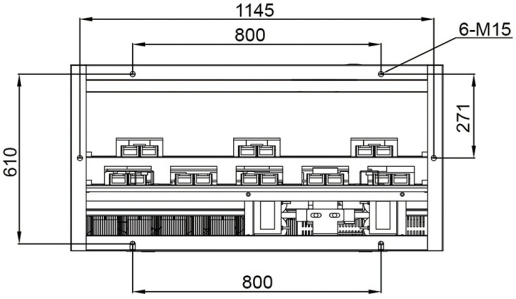
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6-M15
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610
800

1 Standard wiring

1.1 Wiring diagram of main circuit

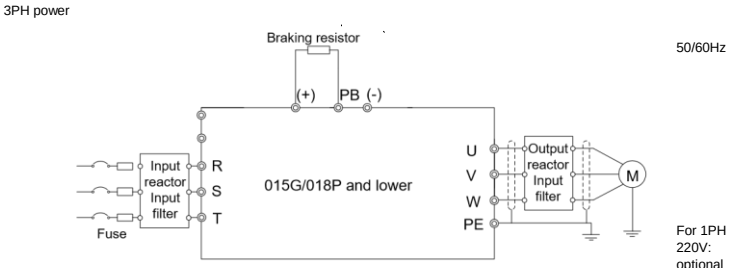


Figure 4-6 Main circuit wiring diagram for the 015G/018P and lower models

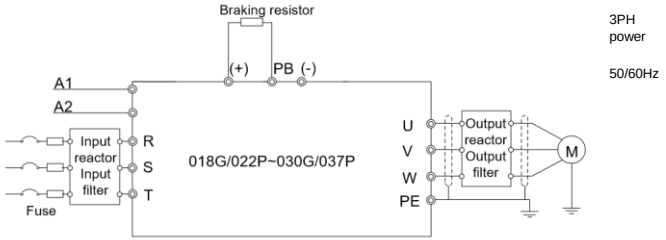


Figure 4-7 Main circuit wiring diagram for the 018G/022P–030G/037P models

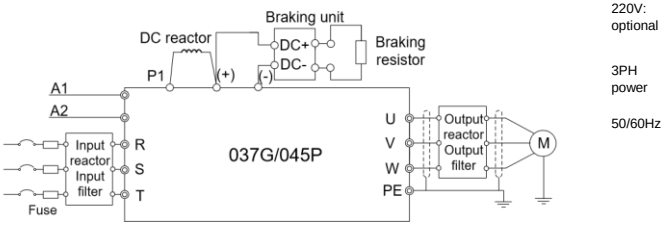


Figure 4-8 Main circuit wiring diagram for the 037G/045P and higher models

Note:

- The fuses, DC reactors, braking units, braking resistors, input reactors, input filters, output reactors and output filters are optional parts. Please refer to ***Peripheral Optional Parts*** for detailed information.
- **A1** and **A2** are optional parts for the 018G/022P and higher models.
- **P1** and **(+)** are short circuited in factory, if need to connect with the DC rector, please remove the contact tag between **P1** and **(+)**.

◆ Before connecting the braking resistor cable, remove the yellow labels of **PB**, **(+)**, and **(-)** from the terminal blocks. Otherwise, poor connection may occur.

1.1.1 Terminals figure of main circuit

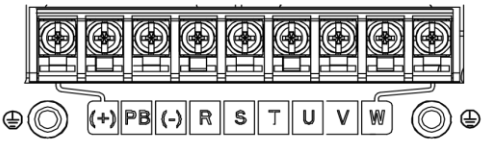


Figure 4-9 Main circuit terminals for the 0R7G–5R5G/7R5G models

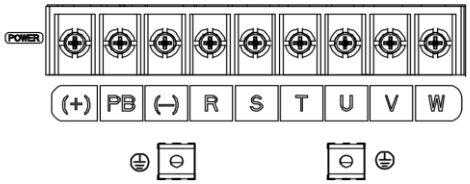


Figure 4-10 Main circuit terminals for the 7R5G/011P–015G/018P models

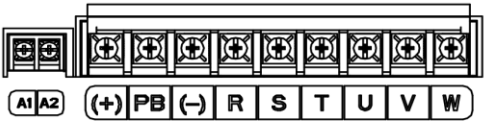


Figure 4-11 Main circuit terminals for the 018G/022P model

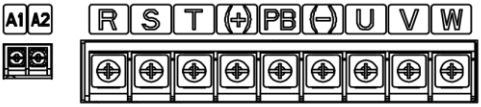


Figure 4-12 Main circuit terminals for the 022G/030P–030G/037P models

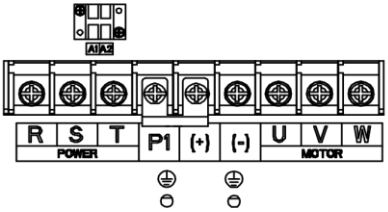


Figure 4-13 Main circuit terminals for the 037G/045P–055G/075P models

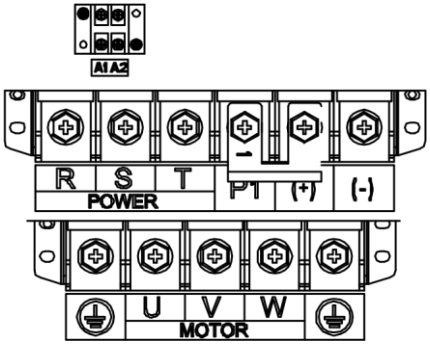


Figure 4-14 Main circuit terminals for the 075G/090P–110G/132P models

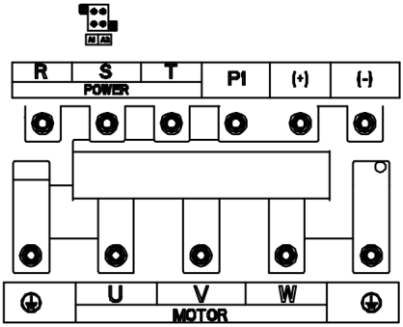


Figure 4-15 Main circuit terminals for the 132G/160P–200G/220P models

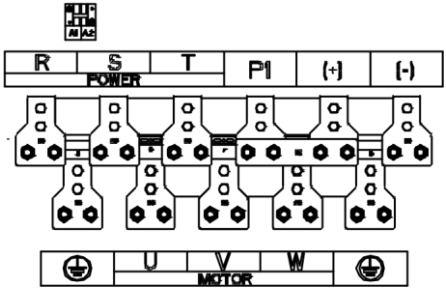


Figure 4-16 Main circuit terminals for the 220G/250P–315G/355P models

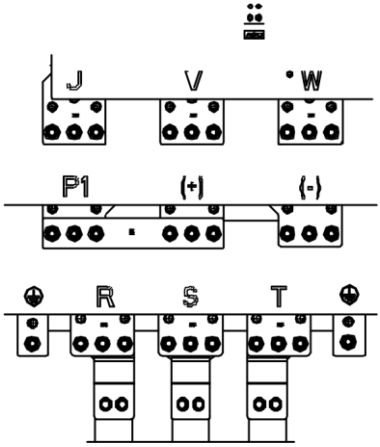


Figure 4-17 Main circuit terminals for the 355G/400P–500G models

Terminal	Terminal name		Function
	For the 030G/037P and lower models	For the 037G/045P and higher models	
R, S, T	Power input of the main circuit		3-phase AC input terminals which are generally connected with the power supply.
U, V, W	The VFD output		3-phase AC output terminals which are generally connected with the motor.
P1	This terminal is inexistent	DC reactor terminal 1	P1 and (+) are connected with the terminals of DC reactor. (+) and (-) are connected with the terminals of braking unit. PB and (+) are connected with the terminals of braking resistor.
(+)	Braking resistor 1	DC reactor terminal 2, braking unit terminal 1	
(-)	/	Braking unit terminal 2	
PB	Braking resistor terminal 2	This terminal is inexistent.	
PE	380V: the grounding resistor is less than 10 ohms		Protective grounding terminals, every machine is provided 2 PE terminals as the standard configuration. These terminals should be grounded with proper techniques.

A1 and A2	Control power terminal	Optional for the 018G/022P and higher models (connect to external 220V control power). Power can be supplied via auxiliary power, making it more convenient for commissioning.

Note:

- Do not use an asymmetrically constructed motor cable. If there is a symmetrically constructed grounding conductor in the motor cable in addition to the conductive shield, connect the grounding conductor to the grounding terminal at the VFD and motor ends.
- Braking resistor, braking unit and DC reactor are optional parts.
- Route the motor cable, input power cable and control cables separately.
- If the terminal is not appeared, the machine does not provide the terminal as the external terminal.

1.1.2 Wiring of terminals in main circuit

1. Connect the ground line of input power cable to the ground terminal (PE) of VFD directly, and connect 3PH input cable to R, S and T and fasten up.
2. Connect the ground line of motor cable to the ground terminal of the VFD, and connect the 3PH motor cable to U, V, W and fasten up.
3. Connect the brake resistor which carries cables to the designated position.
4. Fasten up all the cables on the outside of the VFD if allowed.

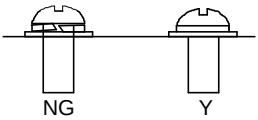


Figure 4-18 Correct installation of the screw

1.1.3 Wiring diagram of control circuit

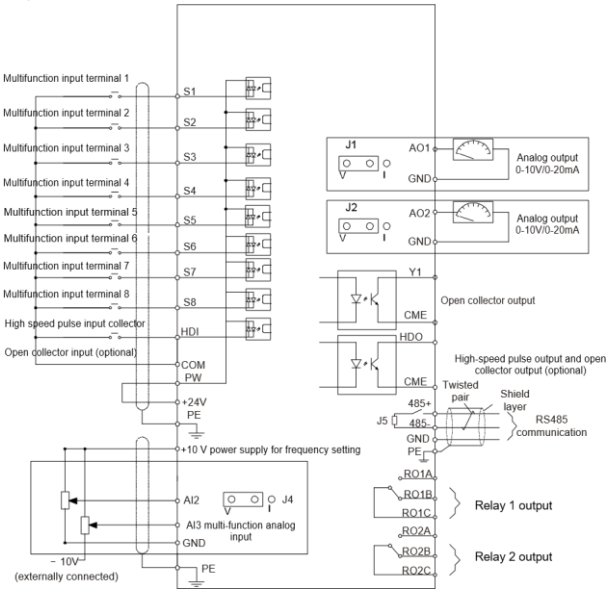


Figure 4-19 Wiring diagram of the control circuit

1.1.4 Terminals of control circuit

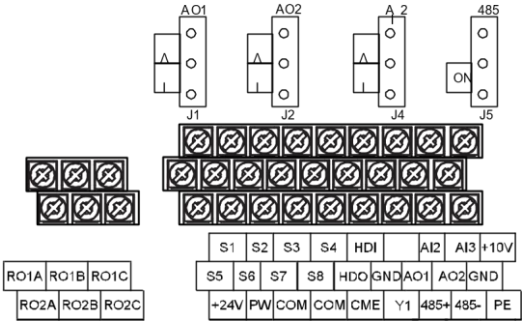


Figure 4-20 Control circuit terminals for the 015G/018P and lower models

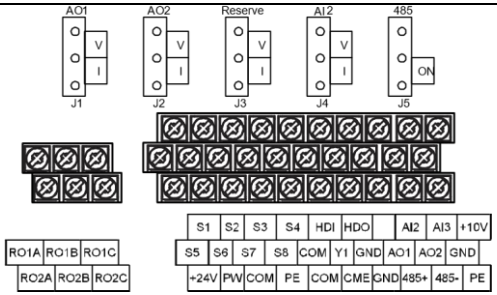


Figure 4-21 Control circuit terminals for the 018G/022P and higher models Note: the spare terminal is reserved and not be used.

Terminal name	Description	
+10V	Local power supply +10V	
AI2	1. Input range: AI2 voltage and current can be chose: 0–10V/0–20mA; AI2 can be shifted by J4; AI3: -10V–+10V 2. Input impedance: voltage input: 20kΩ; current input: 500Ω 3. Resolution: the minimum one is 5mV when 10V corresponds to 50Hz 4. Deviation ±1%, 25°C	
AI3		
GND	+10V reference null potential	
AO1	1. Output range: 0–10V or 0–20mA; AO1 can be shifted by J1; AO2 can be shifted by J2 2. Deviation±1%,25°C	
AO2		
RO1A	RO1 relay output, RO1A NO, RO1B NC, RO1C common terminal Contactor capability: 3A/AC250V,1A/DC30V	
RO1B		
RO1C		
RO2A	RO2 relay output, RO2A NO, RO2B NC, RO2C common terminal Contactor capability: 3A/AC250V,1A/DC30V	
RO2B		
RO2C		
PE	Grounding terminal	
PW	Provide the input switch working power supply from external to internal. Voltage range: 12–30V	
24V	The VFD provides the power supply for users with a maximum output current of 200mA	
COM	+24V common terminal	
S1	Switch input 1	1. Internal impedance: 3.3kΩ

S2	Switch input 2	2. 12–30V voltage input is available 3. The terminal is the dual-direction input terminal supporting both NPN and PNP
S3	Switch input 3	
S4	Switch input 4	

Terminal name	Description	
S5	Switch input 5	4. Max input frequency: 1kHz 5. All are programmable digital input terminal. User can set the terminal function through function codes.
S6	Switch input 6	
S7	Switch input 7	
S8	Switch input 8	
HDI	Except for S1–S8, this terminal can be used as high frequency input channel. max. input frequency: 50kHz	
HDO	1. Switch output: 200mA/30V 2. Output frequency range: 0–50kHz	
COM	+24V common terminal	
CME	Common terminal of HDO and Y1, short-connected with COM in factory	
Y1	1.Swtich capability: 200mA/30V 2.Output frequency range: 0–1kHz	
485+	485 communication interface and 485 differential signal interface If it is the standard 485 communication interface, please use twisted pairs or shield cable.	
485-		

1.1.5 Input /Output signal connection figure

Please use U-shaped contact tag to set NPN mode or PNP mode and the internal or external power supply. The default setting is NPN internal mode.

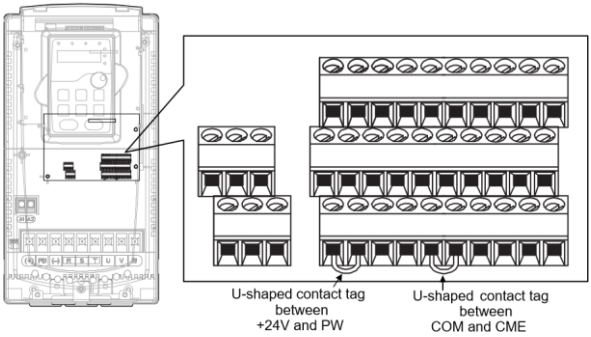


Figure 4-22 U-shaped contact tag

If the signal is from NPN transistor, please set the U-shaped contact tag between +24V and PW as below according to the used power supply.

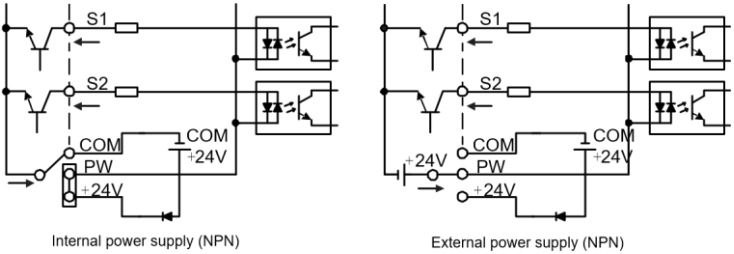


Figure 4-23 NPN modes

If the signal is from PNP transistor, please set the U-shaped contact tag as below according to the used power supply.

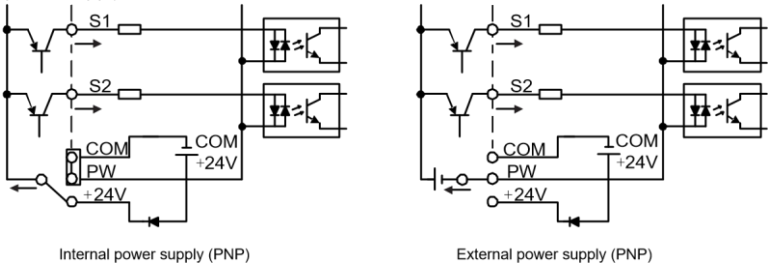


Figure 4-24 PNP modes

1.2 Layout protection

1.2.1 Protecting the VFD and input power cable in short-circuit situations

Protect the VFD and input power cable in short circuit situations and against thermal overload.

Arrange the protection according to the following guidelines.

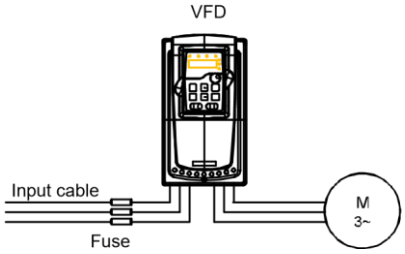


Figure 4-25 Fuse configuration

Note: Select the fuse as the manual indicated. The fuse will protect the input power cable from damage in short-circuit situations. It will protect the surrounding devices when the internal of the VFD is short circuited.

2 Function Parameters

2.1 What this chapter contains

This chapter lists and describes the function parameters.

2.2 NLED200A general series function parameters

The function parameters of NLED200A series VFDs have been divided into 30 groups (P00–P29) according to the function, of which P18–P28 are reserved. Each function group contains certain function codes applying 3-level menus. For example, "P08.08" means the eighth function code in the P8 group function, P29 group is factory reserved, and users are forbidden to access these parameters.

For the convenience of function codes setting, the function group number corresponds to the first level menu, the function code corresponds to the second level menu and the function code corresponds to the third level menu.

1. Below is the instruction of the function lists:

The first line "Function code": codes of function parameter group and parameters;

The second line "Name": full name of function parameters;

The third line "Detailed illustration of parameters": detailed illustration of the function parameters;

The fourth line "Default value": the original factory set value of the function parameter;

The fifth line "Modify": the modifying character of function codes (the parameters can be modified or not and the modifying conditions), below is the instruction:

"○": means the set value of the parameter can be modified on stop and running state;

"◎": means the set value of the parameter cannot be modified on the running state;

"●": means the value of the parameter is the real detection value which cannot be modified.

(The VFD has limited the automatic inspection of the modifying character of the parameters to help users avoid inadvertent modification).

2. "Parameter radix" is decimal (DEC), if the parameter is expressed by hex, then the parameter is separated from each other when editing. The setting range of certain bits are 0–F (hex).

3."The default value" means the function parameter will restore to the default value during default parameters restoring. But the detected parameter or recorded value won't be restored.

4. For a better parameter protection, the VFD provides password protection to the parameters. After setting the password (set P07.00 to any non-zero number), the system will come into the state of password verification firstly after the user press PRG/ESC to come into the function code editing state. And then "0.0.0.0.0." will be displayed. Unless the user input right password, they cannot enter into the system. For the factory setting parameter zone, it needs correct factory password (remind that the users cannot modify the factory parameters by themselves, otherwise, if the parameter setting is incorrect, damage to the VFD may occur). If the password protection is unlocked, the user can modify the password freely and the VFD will work as the last setting one.

When P07.00 is set to 0, the password can be canceled. If P07.00 is not 0 during powering on, then the parameter is protected by the password. When modify the parameters by serial communication, the function of the password follows the above rules, too.

Function code	Name	Description	Default value	Modify
P00 Group Basic functions				
P00.00	Speed control mode	1: Sensorless vector control mode 1 (applying to AM) No need to install encoders. It is suitable in cases with high speed control accuracy for accurate speed and torque control at all power ratings. 2: SVPWM control No need to install encoders. It can improve the control accuracy with the advantages of stable operation, valid low-frequency torque boost and current vibration suppression and the functions of slip compensation and voltage adjustment. **Note**: AM-Asynchronous motor	2	◎
P00.01	Run command channel	Select the run command channel of the VFD. The control command of the VFD includes: start, stop, forward, reverse, jogging and fault reset. 0: Keypad running command channel("LOCAL/REMOT" light off) Carry out the command control by RUN, STOP/RST on the keypad. Set the multi-function key QUICK/JOG as FWD/REV shifting function (P07.02=3) to change the running direction; press RUN and STOP/RST simultaneously in running state to make the VFD coast to stop. 1: Terminal running command channel ("LOCAL/REMOT" flickering) Carry out the running command control by the forward rotation, reverse rotation and forward jogging and reverse jogging of the multi-function terminals 2: Communication running command channel ("LOCAL/REMOT" on); The running command is controlled by the upper monitor via communication.	0	○
P00.02	Communication	0: MODBUS communication	0	○

Function code	Name	Description	Default value	Modify
	selection	1–3: Reserved		
P00.03	Max. output frequency	This parameter is used to set the Maximum output frequency of the VFD. Users should pay attention to this parameter because it is the foundation of the frequency setting and the speed of acceleration and deceleration. Setting range: P00.04–400.00Hz	50.00 Hz	◎
P00.04	Upper limit of the running frequency	The upper limit of the running frequency is the upper limit of the output frequency of the VFD which is lower than or equal to the maximum frequency. Setting range: P00.05–P00.03 (max. output frequency)	50.00 Hz	◎
P00.05	Lower limit of the running frequency	The lower limit of the running frequency is that of the output frequency of the VFD. The VFD runs at the lower limit frequency if the set frequency is lower than the lower limit one. **Note:** Max. output frequency ≥ Upper limit frequency ≥ Lower limit frequency Setting range: 0.00Hz–P00.04 (Upper limit of the running frequency)	0.00Hz	◎
P00.06	A frequency command		0	○

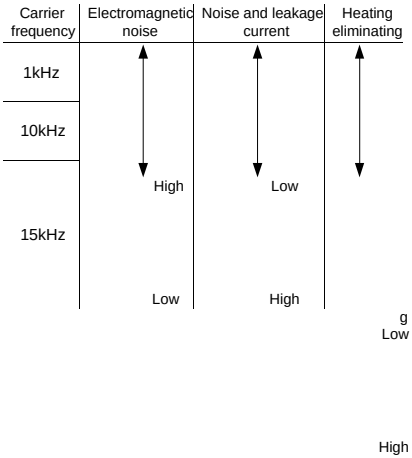
P00.07	B frequency command	**Note:** Frequency A and frequency B cannot use the same frequency setting mode. The frequency source can be set by P00.09. 0: Keypad data setting Modify the value of P00.10 (set the frequency by keypad) to modify the frequency by the keypad. 1: Analog AI1 setting (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 2: Analog AI2 setting 3: Analog AI3 setting Set the frequency by analog input terminals. NLED200A series VFDs provide 3 channels analog input terminals as the standard configuration, of which AI1/AI2 are the voltage/current option (0–10V/0–20mA) which can be shifted by jumpers; while AI3 is voltage input (-10V–+10V).	2	○

Function code	Name	Description	Default value	Modify
		Note: When analog AI1/AI2 selects 0–20mA input, the corresponding voltage of 20mA is 10V. 100.0% of the analog input setting corresponds to the maximum frequency (function code P00.03) in forward direction and -100.0% corresponds to the maximum frequency in reverse direction (function code P00.03) 4: High-speed pulse HDI setting The frequency is set by high-speed pulse terminals. NLED200A series VFDs provide 1 channel high speed pulse input as the standard configuration. The pulse frequency range is 0.00–50.00kHz. 100.0% of the high speed pulse input setting corresponds to the maximum frequency in forward direction (P00.03) and -100.0% corresponds to the maximum frequency in reverse direction (P00.03). **Note:** The pulse setting can only be input by multi-function terminals HDI. Set P05.00 (HDI input selection) to high speed pulse input. 5: Simple PLC program setting The VFD runs at simple PLC program mode when P00.06=5 or P00.07=5. Set P10 (simple PLC and multi-step speed control) to select the running frequency, running direction, ACC/DEC time and the keeping time of corresponding step. See the function description of P10 for detailed information. 6: Multi-step speed running setting The VFD runs at multi-step speed mode when P00.06=6 or P00.07=6. Set P05 to select the current running step, and set P10 to select the current running frequency. The multi-step speed has the priority when P00.06 or P00.07 does not equal to 6, but the setting step can only be the 1–15 steps. The setting step is 0–15 if P00.06 or P00.07 equals 6. 7: PID control setting The running mode of the VFD is process PID control when P00.06=7 or P00.07=7. It is		

Function code	Name	Description	Default value	Modify
		necessary to set P09. The running frequency of the VFD is the value after PID effect. See P09 for the detailed information of the preset source, preset value, and feedback source of PID. 8: MODBUS communication setting The frequency is set by MODBUS communication. See P14 for detailed information. 9–11: Reserved		
P00.08	B frequency command reference	0: Maximum output frequency, 100% of B frequency setting corresponds to the maximum output frequency 1: A frequency command, 100% of B frequency setting corresponds to the maximum output frequency. Select this setting if it needs to adjust on the base of A frequency command.	0	○
P00.09	Combination of the setting source	0: A, the current frequency setting is A frequency command 1: B, the current frequency setting is B frequency command 2: A+B, the current frequency setting is A frequency command + B frequency command 3: A-B, the current frequency setting is A frequency command - B frequency command 4: Max (A, B): the bigger one between A frequency command and B frequency is the set frequency. 5: Min (A, B): The lower one between A frequency command and B frequency is the set frequency. **Note:** The combination manner can be shifted by P05(terminal function)	0	○
P00.10	Keypad set frequency	When A and B frequency commands are selected as "keypad setting", this parameter will be the initial value of VFD reference frequency Setting range: 0.00 Hz–P00.03 (the max. frequency)	50.00 Hz	○

P00.11	ACC time 1	ACC time means the time needed if the VFD speeds up from 0Hz to the max. one (P00.03). DEC time means the time needed if the VFD speeds down from the max. output frequency to 0Hz (P00.03).	Depend on model	○

Function code	Name	Description	Default value	Modify
P00.12	DEC time 1	NLED200A series VFDs define four groups of ACC/DEC time which can be selected by P05. The factory default ACC/DEC time of the VFD is the first group. Setting range of P00.11 and P00.12: 0.0–3600.0s	Depend on model	○
P00.13	Running direction	0: Runs at the default direction, the VFD runs in the forward direction. FWD/REV indicator is off. 1: Runs at the opposite direction, the VFD runs in the reverse direction. FWD/REV indicator is on. Modify the function code to shift the rotation direction of the motor. This effect equals to the shifting the rotation direction by adjusting either two of the motor lines (U, V and W). In keypad control, the motor rotation direction can be changed by QUICK/JOG on the keypad. Refer to parameter P07.02. **Note:** When the function parameter comes back to the default value, the motor's running direction will come back to the factory default state, too. In some cases it should be used with caution after commissioning if the change of rotation direction is disabled. 2: Forbid to run in reverse direction: It can be used in some special cases if the reverse running is disabled.	0	○

<table>
<tr>
<td>P00.14</td>
<td>Carrier frequency setting</td>
<td>


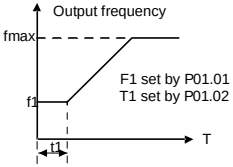
Mapping between models and carrier frequencies:
<table>
<tr><th>Model</th><th>Factory setting of carrier frequency</th></tr>
<tr><td>0R7G–011G/015P</td><td>8kHz</td></tr>
<tr><td>015G/018P–055G/075P</td><td>4kHz</td></tr>
<tr><td>075G/090P and higher</td><td>2kHz</td></tr>
</table>
</td>
<td>Depend on model</td>
<td>○</td>
</tr>
</table>

Function code	Name	Description	Default value	Modify
		The advantage of high carrier frequency: ideal current waveform, little current harmonic wave and motor noise. The disadvantage of high carrier frequency: increasing the switch loss, increasing VFD temperature and the impact to the output capacity. The VFD needs to derate on high carrier frequency. At the same time, the leakage and electrical magnetic interference will increase. Applying low carrier frequency is contrary to the above, too low carrier frequency will cause unstable running, torque decreasing and surge. The manufacturer has set a reasonable carrier frequency when the VFD is in factory. In general, users do not need to change the parameter. When the frequency used exceeds the default carrier frequency, the VFD needs to derate 10% for each additional 1k carrier frequency. Setting range: 1.0–15.0kHz		
P00.15	Motor parameter auto tuning	0: No operation 1: Rotation auto tuning Comprehensive motor parameter auto tune It is recommended to use rotation auto tuning when high control accuracy is needed. 2: Static auto tuning 1 It is suitable in the cases when the motor cannot de-couple from the load. 3: Static auto tuning 2 It is suitable in the cases when the motor cannot de-couple form the load. But only for parts of parameters.	0	◎
P00.16	AVR function selection	0: Invalid 1: Valid during the whole procedure The auto-adjusting function of the VFD can cancel the impact on the output voltage of the VFD because of the bus voltage fluctuation.	1	○

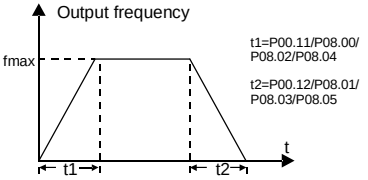
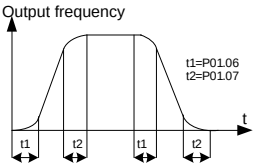
P00.17	VFD type	0: G type, for the constant torque load of rated parameters 1: P type; for the variable torque load of rated parameters (fans and water pumps)	0	◎

Function code	Name	Description	Default value	Modify
		NLED200A series VFDs can use G/P type, the available motor power of G type is small one power file than that of P type.		
P00.18	Function restore parameter	0: No operation 1: Restore the default value 2: Clear fault records 3: Lock the keypad **Note:** The function code is restored to 0 after the operation corresponding to the selected option is performed. Restoring to the default value will cancel the user password. Exercise caution before using this function. When P00.18=3, all the other function codes except P00.18 are read only.	0	◎
P01 Group Start and stop control				
P01.00	Start mode	0: Start directly: start from the starting frequency P01.01 1: Start after DC braking: start the motor from the starting frequency after DC braking (set the parameter P01.03 and P01.04). It is suitable in the cases where reverse rotation may occur to the low inertia load during starting. 2: Start after speed tracking: start the rotating motor smoothly after tracking the rotation speed and direction automatically. It is suitable in the cases where reverse rotation may occur to the big inertia load during starting. Note: This function is available for the 004G/5R5P and higher models.	0	◎

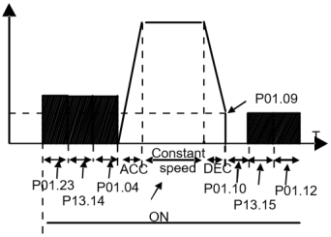
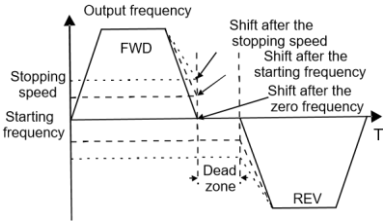
P01.01	Starting frequency of direct start	Starting frequency of direct start means the original frequency during the VFD starting. See P01.02 for detailed information. Setting range: 0.00–50.00Hz	0.50 Hz	◎
P01.02	Retention time of the starting frequency	Set a proper starting frequency to increase the torque of the VFD during starting. During the retention time of the starting frequency, the output frequency of the VFD is the starting frequency. And then, the VFD will run from the starting	0.0s	◎

Function code	Name	Description	Default value	Modify
		frequency to the set frequency. If the set frequency is lower than the starting frequency, the VFD will stop running and keep in the stand-by state. The starting frequency is not limited in the lower limit frequency.  Setting range: 0.0–50.0s		
P01.03	The braking current before starting	The VFD will carry out DC braking at the braking current set before starting and it will speed up after the DC braking time. If the DC braking time is set to 0, the DC braking is invalid. The stronger the braking current, the bigger the braking power. The DC braking current before starting means the percentage of the rated current of the VFD. Setting range of P01.03: 0.0–100.0% Setting range of P01.04: 0.00–50.00s	0.0%	◎
P01.04	The braking time before starting		0.00s	◎

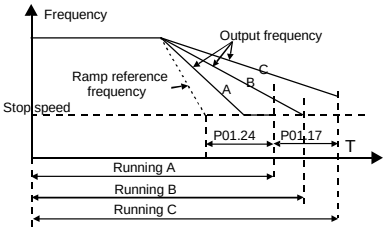
Function code	Name	Description	Default value	Modify

P01.05	ACC/DEC selection	The changing mode of the frequency during start and running. 0: Linear type The output frequency increases or decreases linearly.  1: S curve: Output frequency increases/decreases gradually based on S curve. S curve is used in cases where smooth start/stop is required, such as elevator, conveyer belt, etc. 	0	◎
P01.06	ACC time of the starting step of S curve	Setting rage: 0.0–50.0s Note: Effective when P01.05 = 1	0.1s	○
P01.07	DEC time of the ending step of S curve		0.1s	○
P01.08	Stop mode	0: Decelerate to stop: after the stop command becomes valid, the VFD decelerates to reduce the output frequency during the set time. When the frequency decreases to 0Hz, the VFD stops. 1: Coast to stop: after the stop command becomes valid, the VFD ceases the output immediately. And the load coasts to stop at the mechanical inertia.	0	○
P01.09	Starting frequency of DC braking	Starting frequency of DC braking: start the DC braking when running frequency reaches starting frequency determined by P01.09.	0.00 Hz	○

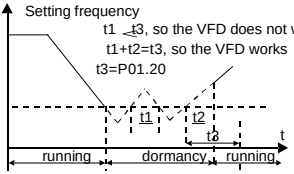
P01.10	Waiting time		0.00s	○

Function code	Name	Description	Default value	Modify
	before DC braking	Waiting time before DC braking: VFDs block the output before starting the DC braking. After this waiting time, the DC braking will be started so as to prevent over-current fault caused by DC braking at high speed.		
P01.11	DC braking current	DC braking current: The value of P01.11 is the percentage of rated current of VFD. The bigger the DC braking current is, the greater the braking torque is.	0.0%	○
P01.12	DC braking time	DC braking time: The retention time of DC brake. If the time is 0, the DC brake is invalid. The VFD will stop at the set deceleration time.  Setting range of P01.09: 0.00Hz–P00.03 (the max. frequency) Setting range of P01.10: 0.00–50.00s Setting range of P01.11: 0.0–100.0% Setting range of P01.12: 0.00–50.00s	0.00s	○
P01.13	Dead time of FWD/REV rotation	During the procedure of switching FWD/REV rotation, set the threshold by P01.14, which is as the table below:  Setting range: 0.0–3600.0s	0.0s	○

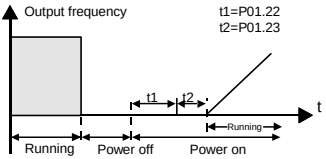
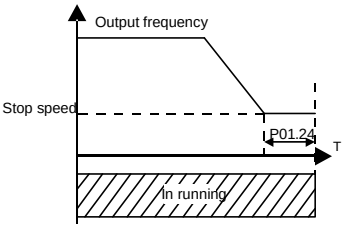
P01.14	Shifting between FWD/REV rotation	Set the threshold point of the VFD: 0: Switch after 0 frequency 1: Switch after the starting frequency 2: Switch after the stopping speed	1	◎

Function code	Name	Description	Default value	Modify
P01.15	Stopping speed	0.00–100.00Hz	0.50 Hz	◎
P01.16	Detection of stopping speed	0: Detect according to speed setting (no stopping delay) 1: Detect according to speed feedback (only valid for vector control)	1	◎
P01.17	Detection time of the feedback speed	If P01.16 is set to 1, the feedback frequency is less than or equal to P01.15 and detect in the set time of P01.17, the VFD will stop; otherwise the VFD will stop after the set time of P01.17.  Setting range: 0.00–100.00s (only valid when P01.16=1)	0.50s	◎
P01.18	Operation protection during powering on	When the running command channel is the terminal control, the system will detect the state of the running terminal during powering on. 0: The terminal running command is invalid when powering on. Even the running command is detected to be valid during powering on, the VFD won't run and the system keeps in the protection state until the running command is canceled and enabled again. 1: The terminal running command is valid when powering on. If the running command is detected to be valid during powering on, the system will start the VFD automatically after the initialization. **Note:** This function should be selected with cautions, or serious result may follow.	0	○

P01.19	Action selection when running frequency is lower than lower limit of frequency (valid when low	This function code determines the running state of the VFD when the set frequency is lower than the lower-limit one. 0: Run at the lower limit frequency 1: Stop 2: Hibernation The VFD will coast to stop when the set frequency	0	◎

Function code	Name	Description	Default value	Modify
	limit of frequency is larger than 0)	is lower than the lower-limit one. If the set frequency is above the lower limit one again and it lasts for the time set by P01.20, the VFD will come back to the running state automatically. 3: Sleep and standby 2 Select sleep and standby 2: When the running frequency is no more than lower limit frequency (P00.05), it is required to judge P24.05 continuously before entering sleep state. Setting range: 0–3		
P01.20	Wake-up from sleep delay	This function code determines the wake-up-from-sleep delay. When the running frequency of the VFD is lower than the lower limit one, the VFD will pause to stand by. When the set frequency is above the lower limit one again and it lasts for the time set by P01.20, the VFD will run automatically. **Note:** The time is the total value when the set frequency is above the lower limit one.  Setting range: 0.0–3600.0s (valid when P01.19=2)	0.0s	○

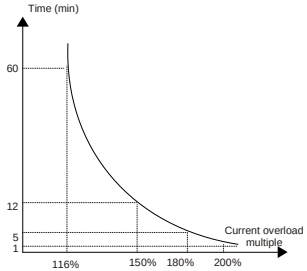
P01.21	Restart after power off	This function can enable the VFD start or not after the power off and then power on. 0: Disable 1: Enable, if the starting need is met, the VFD will run automatically after waiting for the time defined by P01.22.	0	○
P01.22	The waiting time of restart after power off	The function determines the waiting time before the automatic running of the VFD when powering off and then powering on.	1.0s	○

Function code	Name	Description	Default value	Modify
		 Setting range: 0.0–3600.0s (valid when P01.21=1)		
P01.23	Start delay time	The function determines the brake release after the running command is reference, and the VFD is in a stand-by state and wait for the delay time set by P01.23. Setting range: 0.0–60.0s	0.0s	○
P01.24	Delay time of the stop speed	 Setting range: 0.0–100.0 s	0.0s	●
P01.25	0Hz output selection	0: Output without voltage 1: Output with voltage 2: Output at the DC braking current	0	●
P02 Group Motor 1				
P02.01	Rated power of AM 1	0.1–3000.0kW	To ensure control performance, set P02.01~P02.05	Depend on model	◎

P02.02	Rated frequency of AM 1	0.01Hz–P00.03 (the max. frequency)	according to the AM nameplate. NLED200A provides the parameter self-learning function. Accurate parameter self-learning is based on the correct settings of motor nameplate parameters. Perform motor configuration according	50.00 Hz	◎
P02.03	Rated speed of AM 1	1–36000rpm		Depend on model	◎
P02.04	Rated voltage of AM 1	0–1200V		Depend on model	◎
P02.05	Rated current of AM 1	0.8–6000.0A		Depend on model	◎

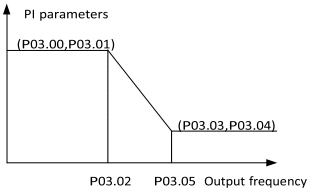
Function code	Name	Description		Default value	Modify
			to the mapping between VFDs and motors. If the motor power is far from the power of the motor that matches the VFD, the control performance of the VFD deteriorates sharply. **Note:** Resetting the rated motor power (P02.01) will initialize P02.02–P02.10.		
P02.06	Stator resistor of AM 1	0.001–65.535Ω	After motor parameter self-learning is completed successfully, in rotary self-learning and static self-learning 1, the settings of P02.06–P02.10 can be updated automatically. In static self-learning mode 2, the settings of P02.06–P02.08 can be updated automatically. These parameters are the basic parameters for the VFD to control the motor and have direct impact on control performance. **Note:** Exercise caution before modifying these parameters.	Depend on model	○
P02.07	Rotor resistor of AM 1	0.001–65.535Ω		Depend on model	○
P02.08	Leakage inductance of AM 1	0.1–6553.5mH		Depend on model	○
P02.09	Mutual inductance of AM 1	0.1–6553.5mH		Depend on model	○
P02.10	Non-load current of AM 1	0.1–6553.5A		Depend on model	○

P02.26	Motor 1 overload protection	0: No protection 1: Common motor (with low speed compensation). Because the heat-releasing effect of the common motors will be weakened, the corresponding electric heat protection will be adjusted properly. The low speed compensation characteristic mentioned here means reducing the threshold of the overload protection of the motor whose	2	◎

Function code	Name	Description	Default value	Modify
		running frequency is below 30Hz. 2: Variable frequency motor (without low speed compensation) Because the heat-releasing effect of the specific motors won't be impacted by the rotation speed, it is not necessary to adjust the protection value during low-speed running.		
P02.27	Motor 1 over load protection coefficient	Times of motor overload M = Iout/(In*K) In is the rated current of the motor, Iout is the output current of the VFD and K is the motor protection coefficient. So, the bigger the value of K is, the smaller the value of M is. When M=116%, protection is performed after motor overload lasts for 1 hour; when M=150%, protection is performed after motor overload lasts for 12 minutes; when M=180%, protection is performed after motor overload lasts for 5 minutes; when M=200%, protection is performed after motor overload lasts for 60 seconds; and when M≥ 400%, protection is performed immediately.  Setting range: 20.0%–120.0%	100.0%	○

P02.28	Correction coefficient of motor 1 power	Correct the power displaying of motor 1. Only impact the displaying value other than the control performance of the VFD. Setting range: 0.00–3.00	1.00	●
P03 Group Vector control				
P03.00	Speed loop proportional gain1	The parameters P03.00–P03.05 only apply to vector control mode. Below the switching frequency 1 (P03.02), the speed loop PI parameters are: P03.00 and P03.01. Above the	20.0	○
P03.01	Speed loop		0.200s	○

Function code	Name	Description	Default value	Modify
	integral time1	switching frequency 2 (P03.05), the speed loop PI parameters are: P03.03 and P03.04. PI parameters are gained according to the linear change of two groups of parameters. It is shown as below:		
P03.02	Low switching frequency		5.00Hz	○
P03.03	Speed loop proportional gain 2		20.0	○
P03.04	Speed loop integral time 2		0.200s	○

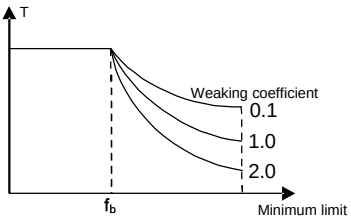
P03.05	High switching frequency	 Setting the proportional coefficient and integral time of the adjustor can change the dynamic response performance of vector control speed loop. Increasing the proportional gain and decreasing the integral time can speed up the dynamic response of the speed loop. But too high proportional gain and too low integral time may cause system vibration and overshoot. Too low proportional gain may cause system vibration and speed static deviation. PI has a close relationship with the inertia of the system. Adjust on the base of PI according to different loads to meet various demands. Setting range of P03.00: 0–200.0 Setting range of P03.01: 0.000–10.000s Setting range of P03.02: 0.00Hz–P03.05 Setting range of P03.03: 0–200.0 Setting range of P03.04: 0.000–10.000s Setting range of P03.05: P03.02–P00.03 (the max. output frequency)	10.00Hz	○
P03.06	Speed loop output filter	0–8 (corresponds to 0–2^8/10ms)	0	○
P03.07	Compensation coefficient of electro motion slip	Slip compensation coefficient is used to adjust the slip frequency of the vector control and improve the speed control accuracy of the system. Adjusting the parameter properly can control the speed steady-state error. Setting range: 50–200%	100%	○
P03.08	Compensation coefficient of		100%	○

Function code	Name	Description	Default value	Modify
	braking slip			
P03.09	Current loop percentage coefficient P	**Note**: 1 These two parameters adjust the PI adjustment parameter of the current loop which affects the dynamic response speed and control accuracy directly. Generally, users do not need to change the default value. 2 Only apply to SVC control mode 0 (P00.00=0). Setting range: 0–65535	1000	○
P03.10	Current loop integral coefficient 1		1000	○
P03.11	Torque setting method	This parameter is used to enable the torque control mode, and set the torque. 0: Torque control is invalid 1: Keypad setting torque (P03.12) 2: Analog AI1 setting torque (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 3: Analog AI2 setting torque 4: Analog AI3 setting torque 5: Pulse frequency HDI setting torque 6: Multi-step torque setting 7: MODBUS communication setting torque 8–10: Reserved Note: For setting modes 2–5, 100% corresponds to three times of the rated current of the motor.	0	○
P03.12	Keypad setting torque	Setting range: -300.0%–300.0% (rated current of the motor)	50.0%	○
P03.13	Torque reference filter time	0.000–10.000s	0.010s	○
P03.14	Upper frequency of forward rotation in vector control	0: Keypad (P03.16 sets P03.14, P03.17 sets P03.15) 1: AI1 (implemented through the analog potentiometer on the keypad for the 0150G/018P	0	○

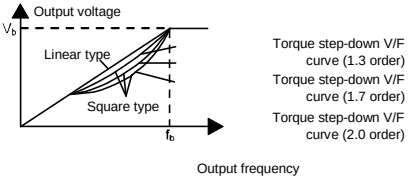
P03.15	Upper frequency of reverse rotation in vector control	and lower models; not available for the 018G/022P and higher models.) 2: AI2 3: AI3 4: Pulse frequency HDI setting upper-limit frequency 5: Multi-step setting upper-limit frequency	0	○

Function code	Name	Description	Default value	Modify
		6: MODBUS communication setting upper-limit frequency Note: Setting method 1–6, 100% corresponds to the maximum frequency		
P03.16	Keypad setting for upper frequency of forward rotation	This function is used to set the upper limit of the frequency. P03.16 sets the value of P03.14; P03.17 sets the value of P03.15. Setting range: 0.00 Hz–P00.03 (the max. output frequency)	50.00 Hz	○
P03.17	Keypad setting for upper frequency of reverse rotation		50.00 Hz	○
P03.18	Upper electro motion torque source	This function code is used to select the electro motion and braking torque upper-limit setting source selection. 0: Keypad setting upper-limit frequency (P03.20 sets P03.18, P03.21 sets P03.19) 1: AI1 (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 2: AI2 3: AI3 4: HDI 5: MODBUS communication **Note**: setting mode 1–4, 100% corresponds to three times of the motor current.	0	○
P03.19	Upper braking torque source		0	○
P03.20	Keypad setting of electro motion torque	The function code is used to set the limit of the torque. Setting range: 0.0–300.0% (rated motor current)	180.0%	○

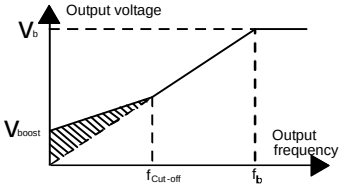
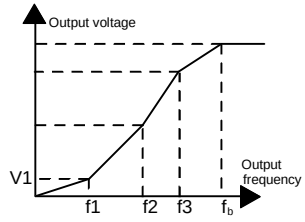
P03.21	Keypad setting of braking torque		180.0%	○
P03.22	Weakening coefficient in constant power zone	The usage of motor in weakening control.	0.3	○
P03.23	Lowest weakening point in		20%	○

Function code	Name	Description	Default value	Modify
	constant power zone	 Function codes P03.22 and P03.23 are effective at constant power. The motor will enter into the weakening state when the motor runs at rated speed. Change the weakening curve by modifying the weakening control coefficient. The bigger the weakening control coefficient is, the steeper the weak curve is. Setting range of P03.22: 0.1–2.0 Setting range of P03.23: 10%–100%		
P03.24	Max. voltage limit	P03.24 sets the max. voltage of the VFD, which is dependent on the site situation. The setting range: 0.0–120.0%	100.0%	◎
P03.25	Pre-exciting time	Reactivate the motor when the VFD starts up. Build up a magnetic field inside the VFD to improve the torque performance during the starting process. The setting time: 0.000–10.000s	0.300s	○
P03.26	Weak magnetic proportional gain	0–8000 **Note**: P03.24–P03.26 are invalid for vector mode.	1000	○

P03.27	Vector control speed	0: Display the actual value 1: Display the setting value	0	○
P03.28	Compensation coefficient of static friction	0.0–100.0% Adjust P03.28 to compensate the coefficient of static friction. Only valid when setting in 1Hz.	0.0%	○
P03.29	Compensation coefficient of dynamic friction	0.0–100.0% Adjust P03.29 to compensate the coefficient of static friction. Only valid when setting in 1Hz.	0.0%	○
P04 Group SVPWM control				
P04.00	Motor 1 V/F curve setting	These function codes define the V/F curve of NLED200A motor 1, and meet the need of different loads.	0	◎

Function code	Name	Description	Default value	Modify
		0: Straight line V/F curve; applying to the constant torque load 1: Multi-dots V/F curve 2: 1.3th power low torque V/F curve 3: 1.7th power low torque V/F curve 4: 2.0th power low torque V/F curve Curves 2–4 apply to the torque loads such as fans and water pumps. Users can adjust according to the features of the loads to achieve a best energy-saving effect. 5: Customized V/F (V/F separation); in this mode, V can be separated from f and f can be adjusted through the frequency reference channel set by P00.06 or the voltage reference channel set by P04.27 to change the feature of the curve. **Note:** V_b in the below picture is the motor rated voltage and f_b is the motor rated frequency.  		

P04.01	Motor 1 torque boost	Torque boost is used for the compensation of low frequency torque. P04.01 is relative to the max. output voltage V_b. P04.02 defines the percentage of closing frequency of manual torque to f_b. Torque boost should be selected according to the load. The bigger the load is, the bigger the torque is. Too big torque boost is inappropriate because the motor will run with over magnetic, and the current of the VFD will increase to add the temperature of the VFD and decrease the efficiency. When the torque boost is set to 0.0%, the VFD is automatic torque boost.	0.0%	○
P04.02	Motor 1 torque boost close	Torque boost threshold: below this frequency point, the torque boost is effective, but over this frequency point, the torque boost is invalid.	20.0%	○

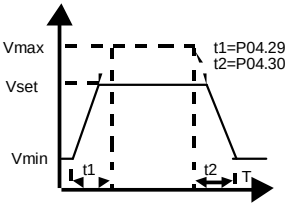
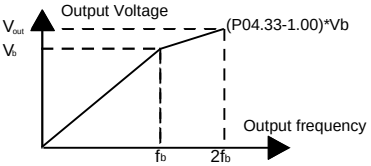
Function code	Name	Description	Default value	Modify
		 Setting range of P04.01: 0.0%: (automatic) 0.1%–10.0% Setting range of P04.02: 0.0%–50.0%		
P04.03	V/F frequency 1 of motor 1	 100.0% V_b	0.00Hz	○
P04.04	V/F voltage 1 of motor 1		00.0%	○
P04.05	V/F frequency 2 of motor 1		00.00Hz	○
P04.06	V/F voltage 2 of motor 1		00.0%	○

P04.07	V/F frequency 3 of motor 1	V3 V2	00.00Hz	○
P04.08	V/F voltage 3 of motor 1	When P04.00=1, the user can set V/F curve through P04.03–P04.08. V/F is generally set according to the load of the motor. **Note:** V1＜V2＜V3, f1＜f2＜f3. Too high low frequency voltage will heat the motor excessively or damage. The VFD may occur the overcurrent speed or overcurrent protection. Setting range of P04.03: 0.00Hz–P04.05 Setting range of P04.04: 0.0%–110.0% Setting range of P04.05: P04.03–P04.07 Setting range of P04.06: 0.0%–110.0% (the rated voltage of motor 1) Setting range of P04.07: P04.05–P02.02 (the rated frequency of motor 1) Setting range of P04.08: 0.0%–110.0% (the rated voltage of motor 1)	00.0%	○
P04.09	V/F slip compensation gain of motor 1	This function code is used to compensate the change of the rotation speed caused by load during compensation SVPWM control to improve the rigidity of the motor. It can be set to the rated	100.0%	○

Function code	Name	Description	Default value	Modify
		slip frequency of the motor which is counted as below: $\Delta f=f_b-n*p/60$ Of which, f_b is the rated frequency of the motor, its function code is P02.02; n is the rated rotating speed of the motor and its function code is P02.03; p is the pole pair of the motor. 100.0% corresponds to the rated slip frequencyΔ f. Setting range: 0.0–200.0%		

P04.10	Motor 1 low frequency vibration control factor	In the SVPWM control mode, current fluctuation may occur to the motor on some frequency, especially the motor with big power. The motor cannot run stably or overcurrent may occur. These phenomena can be canceled by adjusting this parameter. Setting range of P04.10: 0–100 Setting range of P04.11: 0–100 Setting range of P04.12: 0.00Hz–P00.03 (the max. frequency)	10	○
P04.11	Motor 1 high frequency vibration control factor		10	○
P04.12	Motor 1 vibration control threshold		30.00 Hz	○
P04.26	Energy-saving operation selection	0: No action 1: Automatic energy-saving operation Motor on the light load conditions, automatically adjusts the output voltage to save energy	0	◎
P04.27	Voltage setting channel	Select the output setting channel at V/F curve separation. 0: Keypad setting voltage: the output voltage is determined by P04.28. 1: AI1 setting voltage (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 2: AI2 setting voltage; 3: AI3 setting voltage; 4: HDI setting voltage; 5: Multi-step speed setting voltage; 6: PID setting voltage; 7: MODBUS communication setting voltage; **Note:** 100% corresponds to the rated voltage of the motor.	0	○

Function code	Name	Description	Default value	Modify
P04.28	Keypad setting voltage	The function code is the voltage digital set value when the voltage setting channel is selected as "keypad selection" The setting range: 0.0%–100.0%	100.0%	○
P04.29	Voltage increasing time		5.0s	○

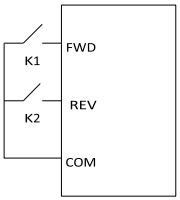
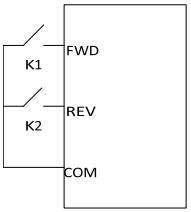
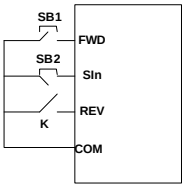
P04.30	Voltage decreasing time	Voltage increasing time is the time when the VFD accelerates from the output minimum voltage to the output maximum voltage. Voltage decreasing time is the time when the VFD decelerates from the output maximum voltage to the output minimum voltage. The setting range: 0.0–3600.0s	5.0s	○
P04.31	Maximum output voltage	Set the upper and low limit of the output voltage. Setting range of P04.31: P04.32–100.0% (the rated voltage of the motor) Setting range of P04.32: 0.0%–P04.31 (the rated voltage of the motor) 	100.0%	◎
P04.32	Minimum output voltage		0.0%	◎
P04.33	Flux weakening coefficient at constant power	Used to adjust the output voltage of VFD in SVPWM mode during flux weakening. Note: Invalid in constant-torque mode.  Setting range of P04.33: 1.00–1.30	1.00	•
P04.34	Reserved			
P05 Group Input terminals				
P05.00	HDI input	0: HDI is high pulse input. See P05.50–P05.54 1: HDI is switch input	0	◎

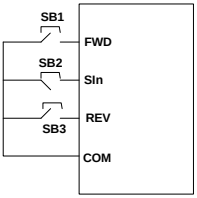
Function code	Name	Description	Default value	Modify
P05.01	S1 terminal function selection	0: No function 1: Forward rotation 2: Reverse rotation 3: 3-wire control 4: Forward jogging 5: Reverse jogging 6: Coast to stop 7: Fault reset 8: Operation pause 9: External fault input 10: Increasing frequency setting(UP) 11: Decreasing frequency setting(DOWN) 12: Cancel the frequency change setting 13: Shift between A setting and B setting 14: Shift between combination setting and A setting 15: Shift between combination setting and B setting 16: Multi-step speed terminal 1 17: Multi-step speed terminal 2 18: Multi-step speed terminal 3 19: Multi- step speed terminal 4 20: Multi- step speed pause 21: ACC/DEC time option terminal 1 22: ACC/DEC time option terminal 2 23: Simple PLC stop reset 24: Simple PLC pause 25: PID control pause 26: Traverse Pause (stop at the current frequency) 27: Traverse reset (return to the center frequency) 28: Counter reset 29: Torque control prohibition 30: ACC/DEC prohibition 31: Counter trigger 32: Length reset 33: Cancel the frequency change setting temporarily 34: DC brake	1	◎
P05.02	S2 terminal function selection		4	◎
P05.03	S3 terminal function selection		7	◎
P05.04	S4 terminal function selection		0	◎
P05.05	S5 terminal function selection		0	◎
P05.06	S6 terminal function selection		0	◎
P05.07	S7 terminal function selection		0	◎

<table>
<tr><th>Function code</th><th>Name</th><th>Description</th><th>Default value</th><th>Modify</th></tr>
<tr><td>P05.08</td><td>S8 terminal function selection</td><td>36: Shift the command to the keypad
37: Shift the command to the terminals
38: Shift the command to the communication
39: Pre-exciting command
40: Clear the power consumption
41: Keep the power consumption
61: PID pole switching</td><td>0</td><td>◎</td></tr>
<tr><td>P05.09</td><td>HDI terminal function selection</td><td>When the terminal acts as acceleration/ deceleration time selection function, it is required to select four groups of acceleration/deceleration time via state combination of these two terminal (while terminal 1 choose 21, terminal 2 choose 22)
<table>
<tr><th>Terminal1 (21)</th><th>Terminal2 (22)</th><th>ACC/DEC time selection</th><th>Parameters</th></tr>
<tr><td>OFF</td><td>OFF</td><td>ACC/DEC time 1</td><td>P00.11/P00 12</td></tr>
<tr><td>ON</td><td>OFF</td><td>ACC/DEC time 2</td><td>P08.00/P08 01</td></tr>
<tr><td>OFF</td><td>ON</td><td>ACC/DEC time 3</td><td>P08.02/P08 03</td></tr>
<tr><td>ON</td><td>ON</td><td>ACC/DEC time 4</td><td>P08.04/P08 05</td></tr>
</table></td><td>0</td><td>◎</td></tr>
<tr><td>P05.10</td><td>Polarity selection of the input terminals</td><td>The function code is used to set the polarity of the input terminals.
Set the bit to 0, the input terminal is anode.
Set the bit to 1, the input terminal is cathode.
<table>
<tr><td>BIT0</td><td>BIT1</td><td>BIT2</td><td>BIT3</td><td>BIT4</td></tr>
<tr><td>S1</td><td>S2</td><td>S3</td><td>S4</td><td>S5</td></tr>
<tr><td>BIT5</td><td>BIT6</td><td>BIT7</td><td>BIT8</td><td></td></tr>
<tr><td>S6</td><td>S7</td><td>S8</td><td>HDI</td><td></td></tr>
</table>
The setting range: 0x000–0x1FF</td><td>0x000</td><td>○</td></tr>
<tr><td>P05.11</td><td>ON-OFF filter time</td><td>Set the sample filter time of S1–S8 and HDI the terminals. If the interference is strong, increase parameter to avoid the disoperation.
0.000–1.000s</td><td>0.010s</td><td>○</td></tr>
</table>

P05.12	Virtual terminals setting	0x000–0x1FF(0: Disabled, 1: Enabled) BIT0: S1 virtual terminal BIT1: S2 virtual terminal BIT2: S3 virtual terminal BIT3: S4 virtual terminal BIT4: S5 virtual terminal BIT5: S6 virtual terminal BIT6: S7 virtual terminal BIT7: S8 virtual terminal BIT8: HDI virtual terminal **Note:** After a virtual terminal is enabled, the	0x000	◎

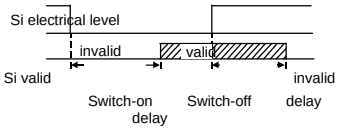
Function code	Name	Description	Default value	Modify
		terminal status can be changed only through communication, and the communication address is 0x200A.		

P05.13	Terminals control running mode	Set the operation mode of the terminals control 0: 2-wire control 1, comply the enable with the direction. This mode is widely used. It determines the rotation direction by the defined FWD and REV terminals command.  FWD / REV / Running command: ON / OFF / Forward running; OFF / ON / Reverse running; ON / ON / Hold on; OFF / OFF / Stopping 1: 2-wire control 2; Separate the enable from the direction. FWD defined by this mode is the enabling ones. The direction depends on the state of the defined REV.  FWD / REV / Running command: OFF / OFF / Stopping; ON / OFF / Forward running; OFF / ON / Stopping; ON / ON / Reverse running 2: 3-wire control 1; Sin is the enabling terminal on this mode, and the running command is caused by FWD and the direction is controlled by REV. Sin is natural closed.  	0	◎

<table>
<tr><th>Function code</th><th>Name</th><th>Description</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>
The direction control is as below during operation:
<table>
<tr><th>Sln</th><th>REV</th><th>Previous direction</th><th>Current direction</th></tr>
<tr><td rowspan="2">ON</td><td rowspan="2">OFF→ON</td><td>Forward</td><td>Reverse</td></tr>
<tr><td>Reverse</td><td>Forward</td></tr>
<tr><td rowspan="2">ON</td><td rowspan="2">ON→OFF</td><td>Reverse</td><td>Forward</td></tr>
<tr><td>Forward</td><td>Reverse</td></tr>
<tr><td rowspan="2">ON→ OFF</td><td>ON</td><td colspan="2" rowspan="2">Decelerate to stop</td></tr>
<tr><td>OFF</td></tr>
</table>
3: 3-wire control 2; Sin is the enabling terminal on this mode, and the running command is caused by SB1 or SB3 and both of them control the running direction. NC SB2 generates the stop command.


<table>
<tr><th>Sln</th><th>FWD</th><th>REV</th><th>Direction</th></tr>
<tr><td rowspan="2">ON</td><td rowspan="2">OFF→ ON</td><td>ON</td><td>Forward</td></tr>
<tr><td>OFF</td><td>Reverse</td></tr>
<tr><td rowspan="2">ON</td><td>ON</td><td rowspan="2">OFF→ ON</td><td>Forward</td></tr>
<tr><td>OFF</td><td>Reverse</td></tr>
<tr><td rowspan="2">ON→ OFF</td><td>/</td><td>/</td><td rowspan="2">Decelerate to stop</td></tr>
<tr><td>/</td><td>/</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

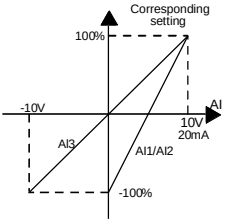
		Note: for the 2-wire running mode, when FWD/REV terminal is valid, the VFD stop because of the stopping command from other sources, even the control terminal FWD/REV keeps valid; the VFD won't work when the stopping command is canceled. Only when FWD/REV is relaunched, the VFD can start again. For example, the valid STOP/RST stop when PLC signal cycles stop, fixed-length stop and terminal control (see P07.04).		

Function code	Name	Description	Default value	Modify
P05.14	S1 terminal switching-on delay time	The function code defines the corresponding delay time of electrical level of the programmable terminals from switching on to switching off.  Setting range: 0.000–50.000s	0.000s	○
P05.15	S1 terminal switching-off delay time		0.000s	○
P05.16	S2 terminal switching-on delay time		0.000s	○
P05.17	S2 terminal switching-off delay time		0.000s	○
P05.18	S3 terminal switching-on delay time		0.000s	○
P05.19	S3 terminal switching-off delay time		0.000s	○
P05.20	S4 terminal switching-on delay time		0.000s	○
P05.21	S4 terminal switching-off delay time		0.000s	○

P05.22	S5 terminal switching-on delay time		0.000s	○
P05.23	S5 terminal switching-off delay time		0.000s	○
P05.24	S6 terminal switching-on delay time		0.000s	○
P05.25	S6 terminal switching-off delay time		0.000s	○
P05.26	S7 terminal switching-on delay time		0.000s	○

Function code	Name	Description	Default value	Modify
P05.27	S7 terminal switching-off delay time		0.000s	○
P05.28	S8 terminal switching-on delay time		0.000s	○
P05.29	S8 terminal switching-off delay time		0.000s	○
P05.30	HDI terminal switching-on delay time		0.000s	○
P05.31	HDI terminal switching-off delay time		0.000s	○
P05.32	Lower limit of AI1	AI1 setting is implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models but is not available for the 018G/022P and higher models. AI2 setting is implemented through the control terminal AI2. AI3	0.00V	○
P05.33	Corresponding setting of the lower limit of AI1		0.0%	○

P05.34	Upper limit of AI1	setting is implemented through the control terminal AI3. The function code defines the relationship between the analog input voltage and its corresponding set value. If the analog input voltage beyond the set minimum or maximum input value, the VFD will count at the minimum or maximum one. When the analog input is the current input, the corresponding voltage of 0–20mA is 0–10V. In different cases, the corresponding rated value of 100.0% is different. See the application for detailed information. The figure below illustrates different applications:	10.00V	○
P05.35	Corresponding setting of the upper limit of AI1		100.0%	○
P05.36	AI1 input filter time		0.100s	○
P05.37	Lower limit of AI2		0.00V	○
P05.38	Corresponding setting of the lower limit of AI2		0.0%	○
P05.39	Upper limit of AI2		10.00V	○
P05.40	Corresponding setting of the upper limit of AI2		100.0%	○

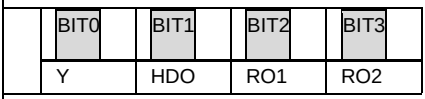
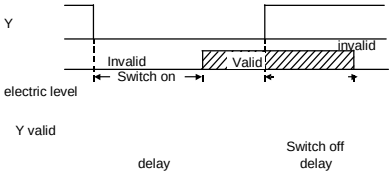
Function code	Name	Description	Default value	Modify
P05.41	AI2 input filter time	 Input filter time: this parameter is used to adjust the sensitivity of the analog input. Increasing the value properly can enhance the anti-interference of the analog, but weaken the sensitivity of the analog input **Note:** Analog AI1 and AI2 can support 0–10V or 0–20mA input, when AI1 and AI2 selects 0–20mA input, the corresponding voltage of 20mA is 10V. AI3 can support the input of -10V–+10V.	0.100s	○
P05.42	Lower limit of AI3		-10.00V	○
P05.43	Corresponding setting of the lower limit of AI3		-100.0%	○
P05.44	Middle value of AI3		0.00V	○
P05.45	Corresponding middle setting of AI3		0.0%	○
P05.46	Upper limit of AI3		10.00V	○

P05.47	Corresponding setting of the upper limit of AI3	Setting range of P05.32: 0.00V–P05.34 Setting range of P05.33: -100.0%–100.0% Setting range of P05.34: P05.32–10.00V Setting range of P05.35: -100.0%–100.0% Setting range of P05.36: 0.000s–10.000s	100.0%	○
P05.48	AI3 input filter time	Setting range of P05.37: 0.00V–P05.39 Setting range of P05.38: -100.0%–100.0% Setting range of P05.39: P05.37–10.00V Setting range of P05.40: -100.0%–100.0% Setting range of P05.41: 0.000s–10.000s Setting range of P05.42: -10.00V–P05.44 Setting range of P05.43: -100.0%–100.0% Setting range of P05.44: P05.42–P05.46 Setting range of P05.45: -100.0%–100.0% Setting range of P05.46: P05.44–10.00V Setting range of P05.47: -100.0%–100.0% Setting range of P05.48: 0.000s–10.000s	0.100s	○
P05.50	Lower limit frequency of HDI	0.000kHz–P05.52	0.000 kHz	○
P05.51	Corresponding setting of HDI low frequency	-100.0%–100.0%	0.0%	○

Function code	Name	Description	Default value	Modify
	setting			
P05.52	Upper limit frequency of HDI	P05.50–50.00kHz	50.00 kHz	○
P05.53	Corresponding setting of upper limit frequency of HDI	-100.0%–100.0%	100.0%	○
P05.54	HDI frequency input filter time	0.000s–10.000s	0.100s	○

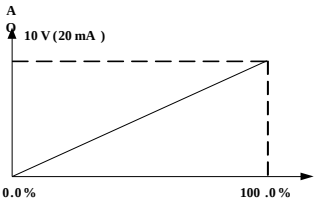
P06 Group Output terminals				
P06.00	HDO output	The function selection of the high-speed pulse output terminals. 0: Open collector pole high speed pulse output: The max. pulse frequency is 50.0kHz. See P06.27–P06.31 for detailed information of the related functions. 1: Open collector pole output. See P06.02 for detailed information of the related functions.	0	◎
P06.01	Y1 output	0: Invalid 1: In operation 2: Forward rotation 3: Reverse rotation 4: Jogging 5: The VFD fault 6: Frequency degree test FDT1 7: Frequency degree test FDT2 8: Frequency arrival 9: Zero speed running 10: Upper limit frequency arrival 11: Lower limit frequency arrival 12: Ready for operation 13: Pre-magnetizing 14: Overload pre-alarm 15: Underload pre-alarm 16: Completion of simple PLC step 17: Completion of simple PLC cycle 18: Setting count value arrival 19: Defined count value arrival	0	○
P06.02	HDO output		0	○
P06.03	Relay RO1 output		1	○
P06.04	Relay RO2 output		5	○

Function code	Name	Description	Default value	Modify
		20: External fault valid 22: Running time arrival 23: MODBUS communication virtual terminals output 26: DC bus voltage establishment 27: Auxiliary motor 1 28: Auxiliary motor 2		

<table>
<tr><td>P06.05</td><td>Polarity selection of output terminals</td><td>The function code is used to set the pole of the output terminal.
When the current bit is set to 0, output terminal is positive.
When the current bit is set to 1, output terminal is negative.
 
Setting range: 0–F</td><td>0</td><td>○</td></tr>
<tr><td>P06.06</td><td>Y1 switching-on delay time</td><td rowspan="8">The function code defines the corresponding d time of the electrical level change during the programmable terminal switching on and off.
 
The setting range: 0.000–50.000s
Note: P06.08 and P06.09 are valid only when P06.00=1.</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.07</td><td>Y1 switching-off delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.08</td><td>HDO switching-on delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.09</td><td>HDO switching-off delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.10</td><td>RO1 switching-on delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.11</td><td>RO1 switching-off delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.12</td><td>RO2 switching-on delay time</td><td>0.000s</td><td>○</td></tr>
<tr><td>P06.13</td><td>RO2 switching-off delay time</td><td>0.000s</td><td>○</td></tr>
</table>

Function code	Name	Description	Default value	Modify
P06.14	AO1 output	0: Running frequency 1: Setting frequency 2: Ramp reference frequency 3: Running rotation speed (relative to twice the motor synchronization rotation speed) 4: Output current (relative to twice the VFD rated current) 5: Output current (relative to twice the motor rated current) 6: Output voltage (relative to 1.5 times the rated voltage of the VFD) 7: Output power (relative to twice the rated power of the motor) 9: Output torque (relative to twice the rated torque of the motor) 10: Analog AI1 input value (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 11: Analog AI2 input value 12: Analog AI3 input value 13: High speed pulse HDI input value 14: MODBUS communication set value 1 15: MODBUS communication set value 2 22: Torque current (relative to triple the motor rated current) 23: Ramp reference frequency(with sign)	0	○
P06.15	AO2 output		0	○
P06.16	HDO high-speed pulse output selection		0	○
P06.17	Lower limit of AO1 output	The above function codes define the relative relationship between the output value and analog	0.0%	○

P06.18	Corresponding AO1 output to the lower limit	output. When the output value exceeds the range of set maximum or minimum output, it will count according to the low-limit or upper-limit output. When the analog output is current output, 1mA	0.00V	○
P06.19	Upper limit of		100.0%	○

Function code	Name	Description	Default value	Modify
	AO1 output	equals to 0.5V.		
P06.20	Corresponding AO1 output to the upper limit	In different cases, the corresponding analog output of 100% of the output value is different. For details, see section 7.10 PID control.	10.00V	○
P06.21	AO1 output filter time		0.000s	○
P06.22	Lower limit of AO2 output		0.0%	○
P06.23	Corresponding AO2 output to the lower limit		0.00V	○
P06.24	Upper limit of AO2 output	Setting range of P06.17: -100.0%–P06.19 Setting range of P06.18: 0.00V–10.00V Setting range of P06.19: P06.17–100.0% Setting range of P06.20: 0.00V–10.00V Setting range of P06.21: 0.000s–10.000s Setting range of P06.22: 0.0%–P06.24 Setting range of P06.23: 0.00V–10.00V Setting range of P06.24: P06.22–100.0% Setting range of P06.25: 0.00V–10.00V Setting range of P06.26: 0.000s–10.000s Setting range of P06.27: 0.000s–10.000s Setting range of P06.28: 0.00–50.00kHz Setting range of P06.29: P06.27–100.0% Setting range of P06.30: 0.00–50.00kHz Setting range of P06.31: 0.000s–10.000s	100.0%	○
P06.25	Corresponding AO2 output to the upper limit		10.00V	○
P06.26	AO2 output filter time		0.000s	○
P06.27	Lower limit of HDO output		0.00%	○
P06.28	Corresponding HDO output to the lower limit		0.00kHz	○
P06.29	Upper limit of HDO output		100.0%	○
P06.30	Corresponding HDO output to the upper limit		50.00 kHz	○
P06.31	HDO output filter time		0.000s	○

P07 Group Human-Machine Interface

P07.00	User's password	0–65535 The password protection will be valid when setting any non-zero number. 00000: Clear the previous user's password, and make the password protection invalid. After the user's password becomes valid, if the password is incorrect, users cannot enter the parameter menu. Only correct password can make	0	○

Function code	Name	Description	Default value	Modify
		the user checks or modify the parameters. Please remember all users' passwords. Retreat editing state of the function codes and the password protection will become valid in 1 minute. If the password is available, press PRG/ESC to enter into the editing state of the function codes, and then "0.0.0.0.0" will be displayed. Unless input right password, the operator cannot enter into it. **Note:** Restoring to the default value can clear the password, please use it with caution.		
P07.01	Parameter copy	The function code determines the mode of parameters copy. 0: No operation 1: Upload the local function parameter to the keypad 2: Download the keypad function parameter to local address (including the motor parameters) 3: Download the keypad function parameter to local address (excluding the motor parameter of P02 group) 4: Download the keypad function parameters to local address (only for the motor parameter of P02 group) **Note:** After completing the 1–4 operations, the parameter will come back to 0 automatically, the function of upload and download excludes the factory parameters of P29.	0	◎

P07.02	QUICK/JOG function selection	Ones: Function of QUICK/JOG key 0: No function 1: Jogging. Press QUICK/JOG to begin the jogging running. 2: Shift the display state by the shifting key. Press QUICK/JOG to shift the displayed function code from right to left. 3: Shift between forward rotations and reverse rotations. Press QUICK/JOG to shift the direction of the frequency commands. This function is only valid in the keypad commands channels. 4: Clear UP/DOWN settings. Press QUICK/JOG to clear the set value of UP/DOWN.	0x01	◎

Function code	Name	Description	Default value	Modify
		5: Coast to stop. Press QUICK/JOG to coast to stop. 6: Shift the running commands source. Press QUICK/JOG to shift the running commands source. 7: Quick commission mode (committee according to the non-factory parameter) Note: Press QUICK/JOG to shift between forward rotation and reverse rotation, the VFD does not record the state after shifting during powering off. The VFD will run according to parameter P00.13 during next powering on. Tens: Keypad lock selection 0: Do not lock keypad buttons 1: Lock all the keypad buttons 2: Lock part of the keypad buttons (lock PRG/ESC key only) Note: If the tens is 1, press PRG+DAT keys three times, and all the keypad buttons will be locked; Keep DAT key pressed down while pressing V key three times can unlock keypad buttons. Setting range: 0x00–0x27		

P07.03	Shifting sequence selection of QUICK/JOG commands	When P07.02=6, set the shifting sequence of running command channels. 0: Keypad control→terminals control →communication control 1: Keypad control←→terminals control 2: Keypad control←→communication control 3: Terminals control←→communication control	0	◎
P07.04	STOP/RST stop function	STOP/RST is valid for stop function. STOP/RST is valid in any state for the fault reset. 0: Only valid for the keypad control 1: Both valid for keypad and terminals control 2: Both valid for keypad and communication control 3: Valid for all control modes	0	◎
P07.05	Parameters state 1	0x0000–0xFFFF BIT0: running frequency (Hz on) BIT1: set frequency (Hz flickering) BIT2: bus voltage (Hz on) BIT3: output voltage (V on) BIT4: output current (A on) BIT5: running rotation speed (rpm on) BIT6: output power (% on) BIT7: output torque (% on) BIT8: PID reference (% flickering) BIT9: PID feedback value (% on) BIT10: input terminals state BIT11: output terminals state BIT12: torque set value (% on) BIT13: pulse counter value BIT14: length value BIT15: PLC and the current stage in multi-step speed	0x03FF	◎

Function code	Name	Description	Default value	Modify
P07.06	Parameters state 2	0x0000–0xFFFF BIT0: AI1 (V on) (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) BIT1: AI2 (V on) BIT2: AI3 (V on) BIT3: HDI frequency BIT4: motor overload percentage (% on) BIT5: the VFD overload percentage (% on) BIT6: ramp frequency given value (Hz on) BIT7: linear speed BIT8: AC inlet current (A on) BIT9: upper limit frequency (Hz on)	0x0000	○
P07.07	The parameter in the stop state	0x0000–0xFFFF BIT0: set frequency (Hz on, frequency flickering slowly) BIT1: bus voltage (V on) BIT2: input terminals state BIT3: output terminals state BIT4: PID reference (% flickering) BIT5: PID feedback value (% flickering) BIT6: reserved BIT7: analog AI1 value (V on) (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not	0x00FF	○

Function code	Name	Description	Default value	Modify
		available for the 018G/022P and higher models.) BIT8: analog AI2 value (V on) BIT9: analog AI3 value (V on) BIT10: high speed pulse HDI frequency BIT11: PLC and the current step in multi-step speed BIT12: pulse counters BIT14: upper limit frequency (Hz on)		
P07.08	Frequency coefficient	0.01–10.00 Displayed frequency=running frequency* P07.08	1.00	○
P07.09	Rotation speed coefficient	0.1–999.9% Mechanical rotation speed =120*displayed running frequency×P07.09/motor pole pairs	100.0%	○
P07.10	Linear speed coefficient	0.1–999.9% Linear speed= Mechanical rotation speed×P07.10	1.0%	○
P07.11	Rectifier bridge module temperature	0–100.0°C	/	●
P07.12	IGBT module temperature	0–100.0°C	/	●
P07.13	Software version	1.00–655.35	/	●
P07.14	Local accumulative running time	0–65535h	/	●
P07.15	High bit of power consumption	Display the power used by the VFD. The power consumption of the VFD =P07.15*1000+P07.16 Setting range of P07.15: 0–65535 kWh (*1000) Setting range of P07.16: 0.0–999.9 kWh	/	●
P07.16	Low bit of power consumption		/	●
P07.17	VFD type	0: G type 1: P type	/	●
P07.18	Rated power of the VFD	0.4–3000.0kW	/	●

P07.19	Rated voltage of the VFD	50–1200V	/	●
P07.20	Rated current of the VFD	0.1–6000.0A	/	●

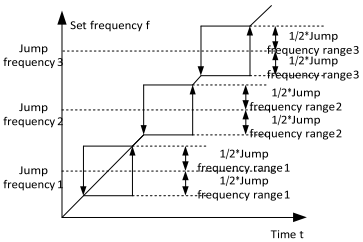
Function code	Name	Description	Default value	Modify
P07.21	Factory bar code 1	0x0000–0xFFFF	/	●
P07.22	Factory bar code 2	0x0000–0xFFFF	/	●
P07.23	Factory bar code 3	0x0000–0xFFFF	/	●
P07.24	Factory bar code 4	0x0000–0xFFFF	/	●
P07.25	Factory bar code 5	0x0000–0xFFFF	/	●
P07.26	Factory bar code 6	0x0000–0xFFFF	/	●
P07.27	Type of present fault	0: No fault 1: IGBT U phase protection (OUt1) 2: IGBT V phase protection (OUt2) 3: IGBT W phase protection (OUt3) 4: OC1 5: OC2 6: OC3 7: OV1 8: OV2 9: OV3 10: UV 11: Motor overload (OL1) 12: The VFD overload (OL2) 13: Input side phase loss (SPI) 14: Output side phase loss (SPO) 15: Overheat of the rectifier module (OH1) 16: Overheat fault of the inverter module (OH2)	/	●
P07.28	Type of the last fault		/	●
P07.29	Type of the last but one fault		/	●
P07.30	Type of the last but two fault		/	●

P07.31	Type of the last but three fault	17: External fault (EF) 18: 485 communication fault (CE) 19: Current detection fault (ItE) 20: Motor auto tune fault (tE) 21: EEPROM operation fault (EEP) 22: PID response offline fault (PIDE) 23: Braking unit fault (bCE) 24: Running time arrival (END) 25: Electrical overload (OL3) 26: Panel communication fault (PCE) 27: Parameter uploading fault (UPE)	/	●
P07.32	Type of the last but four fault		/	●

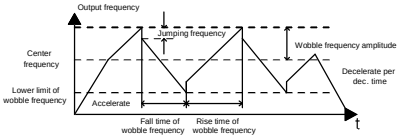
Function code	Name	Description	Default value	Modify
		28: Parameter downloading fault (DNE) 32: Grounding short circuit fault 1 (ETH1) 33: Grounding short circuit fault 2 (ETH2) 36: Under voltage fault (LL)		
P07.33	Running frequency at present fault		0.00Hz	●
P07.34	Ramp reference frequency at present fault		0.00Hz	●
P07.35	Output voltage at the present fault		0V	●
P07.36	Output current at present fault		0.0A	●
P07.37	Bus voltage at present fault		0.0V	●
P07.38	The max. temperature at present fault		0.0° **C**	●
P07.39	Input terminals state at present fault		0	●
P07.40	Output terminals state at present fault		0	●
P07.41	Running frequency at the last fault		0.00Hz	●
P07.42	Ramp reference frequency at the last fault		0.00Hz	●
P07.43	Output voltage at the last fault		0V	●
P07.44	The output current at the last fault		0.0A	●
P07.45	Bus voltage at the last fault		0.0V	●
P07.46	The max. temperature at the last fault		0.0° **C**	●
P07.47	Input terminals state at the last fault		0	●
P07.48	Output terminals state at the last fault		0	●
P07.49	Running frequency at the last but one fault		0.00Hz	●
P07.50	Output voltage at the last but one faults		0.00Hz	●
P07.51	Output current at the last but one faults		0V	●

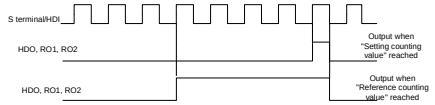
P07.52	Output current at the last but one fault	0.0A	●
P07.53	Bus voltage at the last but one fault	0.0V	●
P07.54	The max. temperature at the last but one fault	0.0° C	●
P07.55	Input terminals state at the last but one fault	0	●
P07.56	Output terminals state at the last but one fault	0	●
P08 Group Enhanced function			
P08.00	ACC time 2	Refer to P00.11 and P00.12 for detailed definition. NLED200A series define four groups of ACC/DEC time which can be selected by P5 group. The first group of ACC/DEC time is the factory default one. Setting range: 0.0–3600.0s	Depend on model ○
P08.01	DEC time 2		Depend on model ○
P08.02	ACC time 3		Depend on model ○

Function code	Name	Description	Default value	Modify
P08.03	DEC time 3		Depend on model	○
P08.04	ACC time 4		Depend on model	○
P08.05	DEC time 4		Depend on model	○
P08.06	Jogging frequency	This parameter is used to define the reference frequency during jogging. Setting range: 0.00Hz –P00.03 (the max. frequency)	5.00Hz	○
P08.07	Jogging ACC time	The jogging ACC time means the time needed if the VFD runs from 0Hz to the max. frequency. The jogging DEC time means the time needed if the VFD goes from the max. frequency (P00.03) to 0Hz. Setting range: 0.0–3600.0s	Depend on model	○
P08.08	Jogging DEC time		Depend on model	○

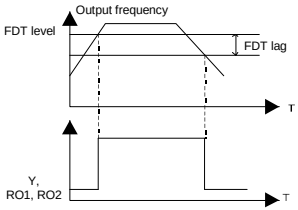
P08.09	Jumping frequency 1	When the set frequency is in the range of jumping frequency, the VFD will run at the edge of the jumping frequency. The VFD can avoid the mechanical resonance point by setting the jumping frequency. The VFD can set three jumping frequency. But this function will be invalid if all jumping points are 0.  Setting range: 0.00Hz –P00.03 (the max. frequency)	0.00Hz	○
P08.10	Jumping frequency range 1		0.00Hz	○
P08.11	Jumping frequency 2		0.00Hz	○
P08.12	Jumping frequency range 2		0.00Hz	○
P08.13	Jumping frequency 3		0.00Hz	○
P08.14	Jumping frequency range 3		0.00Hz	○
P08.15	Traverse range	This function applies to the industries where traverse and convolution function are required such as textile and chemical fiber.	0.0%	○
P08.16	Sudden jumping frequency		0.0%	○

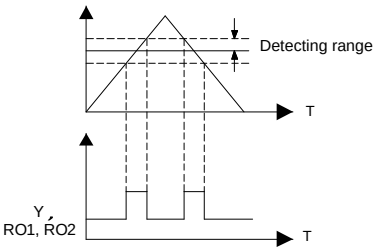
Function code	Name	Description	Default value	Modify
	range	The traverse function means that the output frequency of the VFD is fluctuated with the set frequency as its center. The route of the running		
P08.17	Traverse boost time		5.0s	○

P08.18	Traverse declining time	frequency is illustrated as below, of which the traverse is set by P08.15 and when P08.15 is set as 0, the traverse is 0 with no function.  Traverse range: The traverse running is limited by upper and low frequency. The traverse range relative to the center frequency: traverse range AW = center frequency×traverse range P08.15. Sudden jumping frequency = traverse range AW×sudden jumping frequency range P08.16. When run at the traverse frequency, the value which is relative to the sudden jumping frequency. The raising time of the traverse frequency: The time from the lowest point to the highest one. The declining time of the traverse frequency: The time from the highest point to the lowest one. Setting range of P08.15: 0.0–100.0% (relative to the set frequency) Setting range of P08.16: 0.0–50.0% (relative to the traverse range) Setting range of P08.17: 0.1–3600.0s Setting range of P08.18: 0.1–3600.0s	5.0s	○
P08.19	Number of the displayed decimal points	Ones: Number of decimal points of linear speed 0: No decimal point 1: One decimal point 2: Two decimal points 3: Three decimal points Tens: Number of decimal points of frequency 0: Two decimal points 1: One decimal point Range: 0x00–0x13	0x00	○

Function code	Name	Description	Default value	Modify
P08.20	Correcting analog input and output	0: Correct 1: Not correct Setting range: 0–1	0	◎
P08.25	Setting counting value	The counter counts the input pulse signals through the S terminals (with the counter triggering function) or HDI (P05.00=1). When the counter achieves a fixed number, the multi-function output terminals will output the signal of "fixed counting number arrival" and the counter go on working; when the counter achieves a setting number, the multi-function output terminals will output the signal of "setting counting number arrival", the counter will clear all numbers and stop to recount before the next pulse. The setting counting value P08.26 should be no more than the setting counting value P08.25. The function is illustrated as below:  Setting range of P08.25: P08.26–65535 Setting range of P08.26: 0–P08.25	0	○
P08.26	Reference counting value		0	○
P08.27	Set running time	Pre-set running time of the VFD. When the accumulative running time achieves the set time, the multi-function digital output terminals will output the signal of "running time arrival". Setting range: 0–65535 min	0m	○
P08.28	Fault reset times	The time of the fault reset: set the fault reset time by selecting this function. If the reset time exceeds this set value, the VFD will stop for the fault and wait to be repaired. The interval time of the fault reset: The interval between the time when the fault occurs and the time when the reset action occurs. Setting range of P08.28: 0–10 Setting range of P08.29: 0.1–3600.0s	0	○
P08.29	Interval time of automatic fault reset		1.0s	○

P08.30	Frequency decreasing	The output frequency of the VFD changes as the load. And it is mainly used to balance the power	0.00Hz	○

Function code	Name	Description	Default value	Modify
	ratio of the dropping control	when several VFDs drive one load. Setting range: 0.00–10.00Hz		
P08.32	FDT1 electrical level detection value	When the output frequency exceeds the corresponding frequency of FDT electrical level, the multi-function digital output terminals will output the signal of "frequency level detect FDT" until the output frequency decreases to a value lower than (FDT electrical level—FDT retention detection value) the corresponding frequency, the signal is invalid. Below is the waveform diagram:  Setting range of P08.32: 0.00Hz–P00.03 (the max. frequency) Setting range of P08.33: 0–100.0% (FDT1 electrical level) Setting range of P08.34: 0.00 Hz –P00.03 (the max. frequency) Setting range of P08.35: 0.0–100.0% (FDT2 electrical level)	50.00 Hz	○
P08.33	FDT1 retention detection value		5.0%	○
P08.34	FDT2 electrical level detection value		50.00 Hz	○
P08.35	FDT2 retention detection value		5.0%	○
P08.36	Amplitude value for frequency arrival detection	When the output frequency is among the below or above range of the set frequency, the multi-function digital output terminal will output the signal of "frequency arrival", see the diagram below for detailed information:	0.00 Hz	○

Function code	Name	Description	Default value	Modify
		 Output frequency The setting range: 0.00Hz–P00.03 (the max. frequency)		
P08.37	Energy braking enable	This parameter is used to control the internal braking unit. 0: Disable 1: Enable **Note:** Only applicable to the models with internal braking units.	0	○
P08.38	Threshold voltage	After setting the original bus voltage, adjust this parameter to break the load appropriately. The factory value changes with voltage level. Setting range: 200.0~2000.0V	For 220V: 380.0V For 380V: 700.0V For 660V: 1120.0V	○
P08.39	Cooling fan running mode	Set the operation mode of the cooling fan. 0: Normal mode, after the rectifier receives operation command or the detected temperature of module is above 45°C or the module current is above 20% of the rated current, the fan rotates. 1: The fan keeps on running after power on (generally for the site with high temperature and humidity) 2: The fan will start when the ramp frequency of the VFD is larger than 0Hz; if the running frequency is 0Hz or changes from running state to stop state, the fan will stop after one minute. Setting range: 0–2	0	○

P08.40	PWM selection	0x00–0x21 LED ones: PWM mode selection 0: PWM mode 1, three-phase modulation and two-modulation	00	◎

Function code	Name	Description	Default value	Modify
		1: PWM mode 2, three-phase modulation LED tens: low-speed carrier frequency limit mode 0: Low-speed carrier frequency limit mode 1, the carrier frequency will limit to 2k if it exceeds 2k at low speed 1: Low-speed carrier frequency limit mode 2, the carrier frequency will limit to 4k if it exceeds 4k at low speed 2: No limit		
P08.41	Over modulation selection	0x00–0x11 LED ones 0: Invalid 1: Valid LED tens 0: Light over modulation 1: Heavy over modulation	0x01	◎

P08.42	Keypad data control	0x000–0x1223 LED ones: frequency enable selection 0: Both ∧∨ keys and digital potentiometer adjustments are valid 1: Only ∧∨ keys adjustment is valid 2: Only digital potentiometer adjustments is valid 3: Neither ∧∨ keys nor digital potentiometer adjustments are valid LED tens: frequency control selection 0: Only valid when P00.06=0 or P00.07=0 1: Valid for all frequency setting manner 2: Invalid for multi-step speed when multi-step speed has the priority LED hundreds: action selection during stopping 0: Setting is valid 1: Valid during running, cleared after stopping 2: Valid during running, cleared after receiving the stop command LED thousands: ∧∨ keys and digital potentiometer integral function 0: The integral function is valid 1: The integral function is invalid	0x0000	○
P08.43	Integral ratio of the keypad	0.01–10.00s	0.10s	○

Function code	Name	Description	Default value	Modify
	potentiometer			
P08.44	UP/DOWN terminals control	0x00–0x221 LED ones: frequency control selection 0: UP/DOWN terminals setting valid 1: UP/DOWN terminals setting valid LED tens: frequency control selection 0: Only valid when P00.06=0 or P00.07=0 1: All frequency means are valid 2: When the multi-step is priority, it is invalid to the multi-step LED hundreds: action selection when stop 0: Setting valid 1: Valid in the running, clear after stop 2: Valid in the running, clear after receiving the stop commands	0x000	○
P08.45	UP terminals frequency incremental change rate	0.01–50.00Hz/s	0.50 Hz/s	○
P08.46	DOWN terminals frequency incremental change rate	0.01–50.00 Hz/s	0.50 Hz/s	○
P08.47	Action when the frequency setting is off	0x000–0x111 LED ones: Action selection when power off. 0: Save when power off 1: Clear when power off LED tens: Action selection when MODBUS set frequency off 0: Save when power off 1: Clear when power off LED hundreds: The action selection when other frequency set frequency off 0: Save when power off 1: Clear when power off	0x000	○
P08.48	High bit of initial power consumption	This parameter is used to set the original value of the power consumption.	0	○

P08.49	Low bit of initial power	The original value of the power consumption =P08.48*1000+ P08.49(kWh) Setting range of P08.48: 0–59999	0.0	○

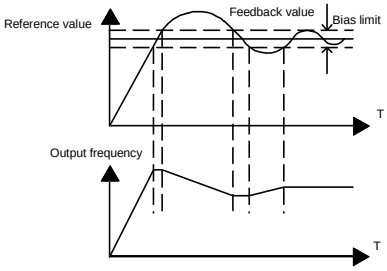
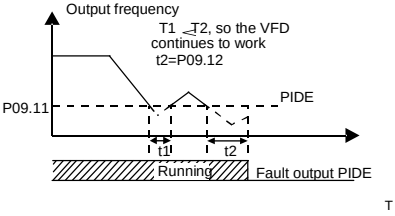
Function code	Name	Description	Default value	Modify
	consumption	Setting range of P08.49: 0.0–999.9		
P08.50	Magnetic flux braking	This function code is used to enable magnetic flux. 0: Invalid. 100–150: The bigger the coefficient, the stronger the braking is. This VFD is used to increase the magnetic flux to decelerate the motor. The energy generated by the motor during braking can be converted into heat energy by increasing the magnetic flux. The VFD monitors the state of the motor continuously even during the magnetic flux period. So the magnetic flux can be used in the motor stop, as well as to change the rotation speed of the motor. Its other advantages are: Brake immediately after the stop command. It does not need to wait the magnetic flux weaken. Better cooling for motors. The current of the stator other than the rotor increases during magnetic flux braking, while the cooling of the stator is more effective than the rotor.	0	●
P08.51	Current regulation coefficient on input side	This function code is used to adjust the displayed current of the AC input side. Setting range: 0.00–1.00	0.56	○
P09 Group PID contro l				

P09.00	PID reference source	When the frequency command selection (P00.06, P00.07) is 7 or the voltage setting channel selection (P04.27) is 6, the running mode of the VFD is procedure PID controlled. The parameter determines the target reference channel during the PID procures. 0: Keypad digital reference (P09.01) 1: Analog channel AI1 reference (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 2: Analog channel AI2 reference 3: Analog channel AI3 set 4: High speed pulse HDI set	0	○

Function code	Name	Description	Default value	Modify
		5: Multi-step speed set 6: MODBUS communication set The setting target of procedure PID is a relative one, 100% of the setting equals to 100% of the response of the controlled system. The system is calculated according to the relative value (0–100.0%). **Note:** Multi-step speed reference, it is realized by setting P10 group parameters.		
P09.01	Keypad PID preset	When P09.00=0, set the parameter whose basic value is the feedback value of the system. The setting range: -100.0%–100.0%	0.0%	○

P09.02	PID feedback source	Select the PID channel by the parameter. 0: Analog channel AI1 feedback (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 1: Analog channel AI2 feedback 2: Analog channel AI3 feedback 3: High speed HDI feedback 4: MODBUS communication feedback 5: MAX (AI2, AI3) **Note:** The reference channel and the feedback channel cannot coincide, otherwise, PID cannot control effectively.	0	○
P09.03	PID output feature	0: PID output is positive: When the feedback signal exceeds the PID reference value, the output frequency of the VFD will decrease to balance the PID. For example, the strain PID control during wrap-up 1: PID output is negative: When the feedback signal is stronger than the PID reference value, the output frequency of the VFD will increase to balance the PID. For example, the strain PID control during wrap-down	0	○
P09.04	Proportional gain (Kp)	The function is applied to the proportional gain P of PID input. P determines the strength of the whole PID adjuster. The parameter of 100 means that when	1.00	○

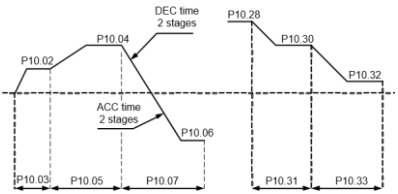
Function code	Name	Description	Default value	Modify
		the offset of PID feedback and reference value is 100%, the adjusting range of PID adjustor is the max. frequency (ignoring integral function and differential function). The setting range: 0.00–100.00		
P09.05	Integral time (Ti)	This parameter determines the speed of PID adjustor to carry out integral adjustment on the deviation of PID feedback and reference. When the deviation of PID feedback and reference is 100%, the integral adjustor works continuously after the time (ignoring the proportional effect and differential effect) to achieve the max. frequency (P00.03) or the max. voltage (P04.31). Shorter the integral time, stronger is the adjustment Setting range: 0.01–10.00s	0.10s	○
P09.06	Differential time (Td)	This parameter determines the strength of the change ratio when PID adjustor carries out integral adjustment on the deviation of PID feedback and reference. If the PID feedback changes 100% during the time, the adjustment of integral adjustor (ignoring the proportional effect and differential effect) is the max. frequency (P00.03) or the max. voltage (P04.31). Longer the integral time, stronger is the adjusting. Setting range: 0.00–10.00s	0. 00s	○
P09.07	Sampling cycle (T)	This parameter means the sampling cycle of the feedback. The modulator calculates in each sampling cycle. The longer the sapling cycle is, the slower the response is. Setting range: 0.000–10.000s	0.100s	○
P09.08	PID control deviation limit	The output of PID system is relative to the maximum deviation of the close loop reference. As shown in the diagram below, PID adjustor stops to work during the deviation limit. Set the function properly to adjust the accuracy and stability of the system.	0.0%	○

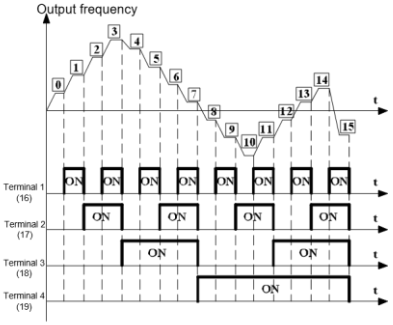
Function code	Name	Description	Default value	Modify
		 Setting range: 0.0–100.0%		
P09.09	Output upper limit of PID	These parameters are used to set the upper and lower limit of the PID adjustor output. 100.0 % corresponds to max. frequency or the max. voltage of (P04.31) Setting range of P09.09: P09.10–100.0% Setting range of P09.10: -100.0%–P09.09	100.0%	○
P09.10	Output lower limit of PID		0.0%	○
P09.11	Feedback offline detection value	Set the PID feedback offline detection value, when the detection value is smaller than or equal to the feedback offline detection value, and the lasting time exceeds the set value in P09.12, the VFD will report "PID feedback offline fault" and the keypad will display PIDE.  Setting range of P09.11: 0.0–100.0% Setting range of P09.12: 0.0–3600.0s	0.0%	○
P09.12	Feedback offline detection time		1.0s	○

P09.13	PID adjustment	0x0000–0x1111 LED ones: 0: Keep on integral adjustment when the frequency achieves the upper and low limit; the integration shows the change between the reference and the feedback unless it reaches the internal integral limit. When the trend between the reference and the feedback changes, it needs more time to offset the impact of continuous	0x0001	○

Function code	Name	Description	Default value	Modify
		working and the integration will change with the trend. 1: Stop integral adjustment when the frequency achieves the upper and low limit. If the integration keeps stable, and the trend between the reference and the feedback changes, the integration will change with the trend quickly. LED tens: P00.08 is 0 0: The same with the setting direction; if the output of PID adjustment is different from the current running direction, the internal will output 0 forcedly. 1: Opposite to the setting direction LED hundreds: P00.08 is 0 0: Limit to the maximum frequency 1: Limit to frequency A LED thousand: 0: A+B frequency, the buffer of A frequency is invalid 1: A+B frequency, the buffer of A frequency is valid ACC/DEC is determined by ACC time 4 of P08.04.		
P09.14	Proportional gain at low frequency (Kp)	0.00–100.00	1.00	○
P09.15	PID command of ACC/DEC time	0.0–1000.0s	0.0s	○

P09.16	PID output filter time	0.000–10.000s	0.000s	○
P10 Group Simple PLC and multi-step speed control				
P10.00	Simple PLC	0: Stop after running once. The VFD has to be commanded again after finishing a cycle. 1: Run at the final value after running once. After finish a signal, the VFD will keep the running frequency and direction of the last run. 2: Cycle running. The VFD will keep on running until receiving a stop command and then, the system will stop.	0	○

Function code	Name	Description	Default value	Modify
P10.01	Simple PLC memory	0: Power loss without memory 1: Power loss memory; PLC record the running step and frequency when power loss.	0	○
P10.02	Multi-step speed 0	100.0% of the frequency setting corresponds to the max. frequency P00.03. When selecting simple PLC running, set P10.02–P10.33 to define the running frequency and direction of all steps. **Note:** The symbol of multi-step determines the running direction of simple PLC. The negative value means reverse rotation.  Multi-step speeds are in the range of $-f_{max}$–f_{max} and it can be set continuously. NLED200A series VFDs can set 16 steps speed, selected by the combination of multi-step terminals 1–4, corresponding to the speed 0 to speed 15.	0.0%	○
P10.03	Running time of step 0		0.0s	○
P10.04	Multi-step speed 1		0.0%	○
P10.05	Running time of step 1		0.0s	○
P10.06	Multi-step speed 2		0.0%	○
P10.07	Running time of step 2		0.0s	○
P10.08	Multi-step speed 3		0.0%	○
P10.09	Running time of step 3		0.0s	○
P10.10	Multi-step speed 4		0.0%	○

P10.11	Running time of step 4		0.0s	○
P10.12	Multi-step speed 5		0.0%	○
P10.13	Running time of step 5		0.0s	○
P10.14	Multi-step speed 6		0.0%	○
P10.15	Running time of step 6		0.0s	○
P10.16	Multi-step speed 7	When terminal1= terminal 2= terminal 3= terminal 4=OFF, the frequency input manner is selected via code P00.06 or P00.07. When all terminals aren't off, it runs at multi-step which takes precedence of keypad, analog value, high-speed pulse, PLC,	0.0%	○
P10.17	Running time of step 7		0.0s	○
P10.18	Multi-step speed 8		0.0%	○
P10.19	Running time of step 8		0.0s	○

Function code	Name	Description	Default value	Modify
P10.20	Multi-step speed 9	communication frequency input. Select at most 16 steps speed via the combination code of terminal 1, terminal 2, terminal 3, and terminal 4. The start and stopping of multi-step running is determined by function code P00.06, the relationship between terminal 1 (16), terminal 2 (17), terminal 3 (18), terminal 4 (19) and multi-step speed is as following:	0.0%	○
P10.21	Running time of step 9		0.0s	○
P10.22	Multi-step speed 10		0.0%	○
P10.23	Running time of step 10		0.0s	○
P10.24	Multi-step speed 11		0.0%	○
P10.25	Running time of step 11		0.0s	○
P10.26	Multi-step speed 12		0.0%	○
P10.27	Running time of step 12		0.0s	○

Terminal 1	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Terminal 2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
Terminal 3	OFF	OFF	OFF	OFF	ON	ON	ON	ON
Terminal 4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Step	0	1	2	3	4	5	6	7

P10.28	Multi-step speed 13	Terminal 1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	0.0%	○
		Terminal 2	OFF	OFF	ON	ON	OFF	OFF	ON	ON		
P10.29	Running time of step 13	Terminal 3	OFF	OFF	OFF	OFF	ON	ON	ON	ON	0.0s	○
		Terminal 4	ON	ON	ON	ON	ON	ON	ON	ON		
P10.30	Multi-step speed 14	Step	8	9	10	11	12	13	14	15	0.0%	○
		Setting range of P10.(2n,1<n<17): -100.0–100.0%										
P10.31	Running time of step 14	Setting range of P10.(2n+1,1<n<17): 0.0–6553.5s(min)									0.0s	○
P10.32	Multi-step speed 15										0.0%	○
P10.33	Running time of step 15										0.0s	○

P10.34 Simple PLC 0–7 step ACC/DEC time

Below is the detailed instruction:

Function code	Binary bit	Step	ACC/DEC 0	ACC/DEC 1	ACC/DEC 2	ACC/DEC 3
P10.34	BIT1 BIT0	0	00	01	10	11
	BIT3 BIT2	1	00	01	10	11
	BIT5 BIT4	2	00	01	10	11
	BIT7 BIT6	3	00	01	10	11
	BIT9 BIT8	4	00	01	10	11
	BIT11 BIT10	5	00	01	10	11
	BIT13 BIT12	6	00	01	10	11

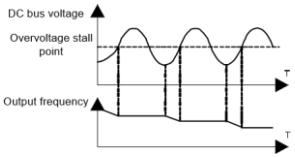
P10.34	Simple PLC 0–7 step ACC/DEC time	0x0000	○
P10.35	Simple PLC 8–15 step ACC/DEC time	0x0000	○

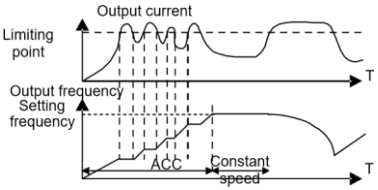
			BIT15	BIT14	7	00	01	10	11		
		P10.35	BIT1	BIT0	8	00	01	10	11		
			BIT3	BIT2	9	00	01	10	11		

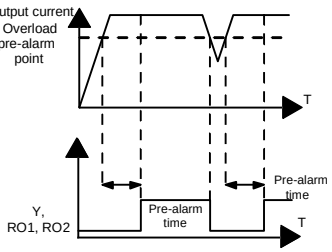
Function code	Name	Description	Default value	Modify
		BIT5 BIT4: 10 00 01 10 11 BIT7 BIT6: 11 00 01 10 11 BIT9 BIT8: 12 00 01 10 11 BIT11 BIT10: 13 00 01 10 11 BIT13 BIT12: 14 00 01 10 11 BIT15 BIT14: 15 00 01 10 11 After the users select the corresponding ACC/DEC time, the combined 16 binary bits will change into decimal bit, and then set the corresponding function codes. Setting range: 0x0000–0xFFFF		

P10.36	PLC restart	0: Restart from the first step; stop during running (cause by the stop command, fault or power loss), run from the first step after restart. 1: Continue to run from the stop frequency; stop during running (cause by stop command and fault), the VFD will record the running time automatically, enter into the step after restart and keep the remaining running at the setting frequency.	0	◎
P10.37	Multi-step time unit	0: Seconds; the running time of all steps is counted by second 1: Minutes; the running time of all steps is counted by minute	0	◎
P11 Group Protective parameters				
P11.00	Phase loss protection	0x00–0x11 LED ones: 0: Input phase loss protection disable 1: Input phase loss protection enable LED tens: 0: Output phase loss protection disable 1: Output phase loss protection enable LED hundreds: 0: Input phase loss hardware protection disable 1: Input phase loss hardware protection enable	111	○
P11.01	Sudden power loss frequency decrease	0: Disable 1: Enable	0	○
P11.02	Frequency decrease ratio	Setting range: 0.00Hz/s–P00.03 (max. frequency) After the power loss of the grid, the bus voltage	10.00 Hz/s	○

Function code	Name	Description	Default value	Modify
	of sudden power loss	drops to the sudden frequency-decreasing point, the VFD begin to decrease the running frequency at P11.02, to make the VFD generate power again. The returning power can maintain the bus voltage to ensure a rated running of the VFD until power recovery. Voltage degree | 220V | 380V | 660V		

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>Frequency decrease point at sudden power loss</td><td>260V</td><td>460V</td><td>800V</td></tr>
</table>
Note:
1. Adjust the parameter properly to avoid the stopping caused by VFD protection during the switching of the grid.
2. Disable input phase loss protection to enable this function.
</td><td></td><td></td></tr>
<tr><td>P11.03</td><td>Overvoltage stall protection</td><td>0: Disable
1: Enable
 
</td><td>1</td><td>○</td></tr>
<tr><td rowspan="2">P11.04</td><td rowspan="2">Protection voltage at overvoltage stall</td><td>120–150%(standard bus voltage) (380V)</td><td>136%</td><td rowspan="2">○</td></tr>
<tr><td>120–150%(standard bus voltage) (220V)</td><td>120%</td></tr>
<tr><td>P11.05</td><td>Current limit action selection</td><td rowspan="3">The actual increasing ratio is less than the ratio of output frequency because of the big load during ACC running. It is necessary to take measures to avoid overcurrent fault and the VFD trips. During the running of the VFD, this function will detect the output current and compare it with the limit defined in P11.06. If it exceeds the level, the VFD will run at stable frequency in ACC running, or the VFD will derate to run during the constant running. If it exceeds the level continuously, the output frequency will keep on decreasing to the lower limit. If the output current is detected to be lower than the limit level, the VFD will accelerate to run.</td><td>01</td><td>◎</td></tr>
<tr><td>P11.06</td><td>Automatic current limit</td><td>G type: 160.0%
P type: 120.0%</td><td>◎</td></tr>
<tr><td>P11.07</td><td>The decreasing ratio during current limit</td><td>10.00 Hz/s</td><td>◎</td></tr>
</table>

Function code	Name	Description	Default value	Modify
		 Setting range of P11.05: 0x00–0x11 LED ones: current limit 0: Invalid 1: Always valid LED tens: overload alarm 0: Valid 1: Invalid Setting range of P11.06: 50.0–200.0% Setting range of P11.07: 0.00–50.00Hz/s		
P11.08	Overload pre-alarm of the motor/VFD	The output current of the VFD or the motor is above P11.09 and the lasting time is beyond P11.10, overload pre-alarm will be output.	0x000	○
P11.09	Overload pre-alarm test level		G type: 150% P type: 120%	○

P11.10	Overload pre-alarm detection time	 Setting range of P11.08: Enable and define the overload pre-alarm of the VFD or the motor. LED ones: 0: Overload pre-alarm of the motor, comply with the rated current of the motor 1: Overload pre-alarm of the VFD, comply with the rated current of the VFD LED tens: 0: The VFD continues to work after underload	0x0000	○

Function code	Name	Description	Default value	Modify
		pre-alarm 1: The VFD continues to work after underload pre-alarm and the VFD stops running after overload fault 2: The VFD continues to work after overload pre-alarm and the VFD stops running after underload fault 3. The VFD stops when overload or underload. LED hundreds: 0: Detection all the time 1: Detection in constant running LED thousands: Overload integral selection 0: Overload integral is invalid 1: Overload integral is valid Setting range: 0000–1131		
P11.11	Detection level of underload pre-alarm	If the VFD current or the output current is lower than P11.11, and its lasting time is beyond P11.12, the VFD will output underload pre-alarm.	50%	○

P11.12	Detection time of underload pre-alarm	Setting range of P11.11: 0–P11.09 Setting range of P11.12: 0.1–3600.0s	1.0s	○
P11.13	Output terminal action during fault	Select the action of fault output terminals on under voltage and fault reset. 0x00–0x11 LED ones: 0: Action under fault under voltage 1: No action under fault under voltage LED tens: 0: Action during the automatic reset 1: No action during the automatic reset	0x00	○
P11.16	Extension functions selection	0x00–0x11 LED ones: Voltage drop frequency-decreasing selection 0: Voltage drop frequency-decreasing selection disable 1: Voltage drop frequency-decreasing selection enable LED tens: Step 2 ACC/DEC time option 0: Step 2 ACC/DEC time option disable 1: Step 2 ACC/DEC time option enable when	00	○

Function code	Name	Description	Default value	Modify
		running frequency more than P08.36, ACC/DEC time switch to step 2 ACC/DEC time		
P13 Group Enhanced function parameters				
P13.13	Braking current of short-circuit	When P01.00=0 during the starting of the VFD, set P13.14 to a non-zero value to enter the short circuit braking.	0.0%	○
P13.14	Braking retention time before starting	When the running frequency is lower than P01.09 during the stopping of the VFD, set P13.15 to a non-zero value to enter into stopping short circuited braking and then carry out the DC braking at the time set by P01.12 (refer to the instruction of P01.09–P01.12). Setting range of P13.13: 0.0–150.0% (the VFD) Setting range of P13.14: 0.00–50.00s Setting range of P13.15: 0.00–50.00s	0.00s	○
P13.15	Braking retention time when stopping		0.00s	○

P14 Group Serial communication				
P14.00	Local communication address	The setting range: 1–247 When the master is writing the frame, the communication address of the slave is set to 0; the broadcast address is the communication address. All slaves on the MODBUS fieldbus can receive the frame, but the salve doesn't answer. The communication address of the drive is unique in the communication net. This is the fundamental for the point to point communication between the upper monitor and the drive. **Note:** The address of the slave cannot set to 0.	1	o
P14.01	Communication baud ratio	Set the digital transmission speed between the upper monitor and the VFD. 0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS 6: 57600BPS 7: 115200BPS **Note:** The baud rate between the upper monitor and the VFD must be the same. Otherwise, the communication is not applied. The bigger the baud rate, the quicker the communication speed.	4	o

Function code	Name	Description	Default value	Modify
P14.02	Digital bit checkout	The data format between the upper monitor and the VFD must be the same. Otherwise, the communication is not applied. 0: No check (N,8,1) for RTU 1: Even check (E,8,1) for RTU 2: Odd check (O,8,1) for RTU 3: No check (N,8,2) for RTU 4: Even check (E,8,2) for RTU 5: Odd check(O,8,2) for RTU 6: No check (N,7,1) for ASCII 7: Even check (E,7,1) for ASCII 8: Odd check (O,7,1) for ASCII 9: No check (N,7,2) for ASCII 10: Even check (E,7,2) for ASCII 11: Odd check (O,7,2) for ASCII 12: No check (N,8,1) for ASCII 13: Even check (E,8,1) for ASCII 14: Odd check (O,8,1) for ASCII 15: No check (N,8,2) for ASCII 16: Even check (E,8,2) for ASCII 17: Odd check (O,8,2) for ASCII	1	○
P14.03	Response delay	0–200ms It means the interval time between the interval time when the drive receives the data and sent it to the upper monitor. If the answer delay is shorter than the system processing time, then the answer delay time is the system processing time, if the answer delay is longer than the system processing time, then after the system deal with the data, waits until achieving the answer delay time to send the data to the upper monitor.	5	○

P14.04	Fault time of communication overtime	0.0 (invalid), 0.1–60.0s When the function code is set as 0.0, the communication overtime parameter is invalid. When the function code is set as non-zero, if the interval time between two communications exceeds the communication overtime, the system will report "485 communication faults" (CE). Generally, set it as invalid; set the parameter in the continuous communication to monitor the	0.0s	○

Function code	Name	Description	Default value	Modify
		communication state.		
P14.05	Transmission fault processing	0: Alarm and stop freely 1: No alarm and continue to run 2: No alarm and stop according to the stop means (only under the communication control) 3: No alarm and stop according to the stop means (under all control modes)	0	○
P14.06	Communication processing	LED ones place: 0: Operation with response: the drive will respond to all reading and writing commands of the upper monitor. 1: Operation without response; The drive only responds to the reading command other than the writing command of the drive. The communication efficiency can be increased by this method. LED tens place: 0: Communication encrypting invalid 1: Communication encrypting valid LED hundreds place, indicating RS485 communication device type 0: NLED200A 1: NLED200A user-defined address 2: CHF100A Note: When the LED hundreds place is 1, P14.07 and P14.08 are valid.	0x00	○
P14.07	User-defined address of running commands	0x0000–0xffff	0x1000	○

P14.08	User-defined address of frequency setting	0x0000–0xffff	0x2000	○
P17 Group Monitoring function				
P17.00	Setting frequency	Display current set frequency of the VFD Range: 0.00Hz–P00.03	/	●
P17.01	Output frequency	Display current output frequency of the VFD Range: 0.00Hz–P00.03	/	●
P17.02	Ramp reference	Display current ramp reference frequency of the VFD	/	●

Function code	Name	Description	Default value	Modify
	frequency	Range: 0.00Hz–P00.03		
P17.03	Output voltage	Display current output voltage of the VFD Range: 0–1200V	/	●
P17.04	Output current	Display current output current of the VFD Range: 0.0–3000.0A	/	●
P17.05	Motor speed	Display the rotation speed of the motor. Range: 0–65535RPM	/	●
P17.08	Motor power	Display current motor power Range: -300–300%	/	●
P17.09	Output torque	Display the current output torque of the VF). Range: -250.0–250.0%	/	●
P17.10	Evaluated motor frequency	Evaluated frequency of motor rotor Range: 0.00Hz–P00.03	/	●
P17.11	DC bus voltage	Display current DC bus voltage of the VFD Range: 0.0–2000.0V	/	●
P17.12	ON-OFF input terminals state	Display current Switch input terminals state of the VFD Range: 0000–00FF BIT8 BIT7 BIT6 BI T5 HDI S8 S7 S6 BIT4 BIT3 BIT2 BIT1 BI T0 S5 S4 S3 S2 S1	/	●
P17.13	ON-OFF output terminals state	Display current Switch output terminals stat e of the VFD BIT3 BIT2 BIT1 BIT0 RO2 RO1 HDO Y Range: 0000–000F	/	●

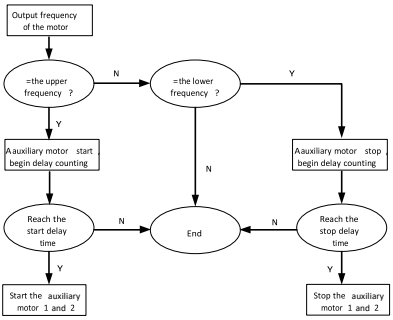
P17.14	Digital adjustment	Display the adjustment through the keypad of the VFD. Range : 0.00Hz–P00.03	/	●
P17.15	Torque reference	Display the torque given, the percentage to the current rated torque of the motor. Setting range: -300.0%–300.0% motor rated current)	/	●
P17.16	Linear speed	Display the current linear speed of the VFD . Range: 0–65535	/	●

Function code	Name	Description	Default value	Modify
P17.17	Length	Display the current length of the VFD. Range: 0–65535	/	●
P17.18	Counting value	Display the current counting number of the VFD. Range: 0–65535	/	●
P17.19	AI1 input voltage	It is implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models. Display analog AI1 input signal Range: 0.00–10.00V	/	●
P17.20	AI2 input voltage	Display analog AI2 input signal Range: 0.00–10.00V	/	●
P17.21	AI3 input voltage	Display analog AI2 input signal Range: -10.00–10.00V	/	●
P17.22	HDI input frequency	Display HDI input frequency Range: 0.000–50.000kHz	/	●
P17.23	PID reference value	Display PID reference value Range: -100.0–100.0%	/	●
P17.24	PID feedback value	Display PID response value Range: -100.0–100.0%	/	●
P17.25	Power factor of the motor	Display the current power factor of the motor. Range: -1.00–1.00	/	●
P17.26	Current running time	Display the current running time of the VFD. Range: 0–65535min	/	●

P17.27	Simple PLC and the current step of multi-step speed	Display simple PLC and the current step of the multi-step speed Range: 0–15	/	●
P17.35	AC input current	Display the input current in AC side. Range: 0.0–5000.0A	/	●
P17.36	Output torque	Display the output torque. Positive value is in the electro motion state, and negative is in the power generating state. Range: -3000.0Nm–3000.0Nm	/	●
P17.37	Counting of the motor overload	0–100 (100 is OL1 fault)	/	●
P17.38	PID output	-100.00–100.00%	0.00%	●
P17.39	Wrong download of	0.00–99.99	0.00	●

Function code	Name	Description	Default value	Modify
	parameters			
P24 Group Water supply				
P24.00	Water supply selection	0: Disabled 1: Enabled	0	◎
P24.01	Press feedback source	0: AI1 setting value (implemented through the analog potentiometer on the keypad for the 0150G/018P and lower models; not available for the 018G/022P and higher models.) 1: AI2 setting value 2: AI3 setting value 3: HDI setting value	0	○
P24.02	Hibernation check	0: Hibernate as the setting frequency ‹P24.03 1: Hibernate as the feedback pressure ›P24.04	0	◎
P24.03	Starting frequency of the hibernation	0.00–P00.03 (the max. frequency)	10.00 Hz	○

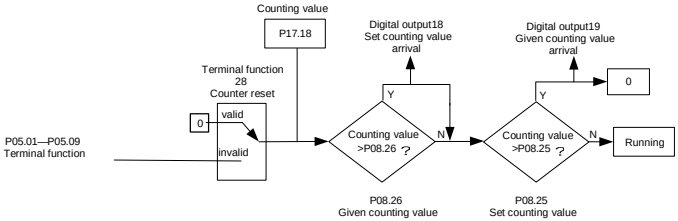
P24.04	Starting pressure of hibernation	0.00–100.0%	50.0%	○
P24.05	Hibernation delay time	0.0–3600.0s	5.0s	○
P24.06	Hibernation awake	0: Awake as the setting frequency ›P24.07 1: Awake as the feedback pressure ‹P24.08	0	◎
P24.07	Awake frequency	0.00–P00.03 (the max. frequency)	20.00 Hz	○
P24.08	Setting value of hibernation awake	0.00–100.0%	10.0%	○
P24.09	Mini hibernation time	0.0–3600.0s	5.0s	○
P24.10	Valid auxiliary motor	P24.10–P24.12 can make three motors to form a simple system of water supply.	0	○
P24.11	Start/stop delay time of auxiliary motor 1		5.0s	○
P24.12	Start/stop delay time of auxiliary motor 2		5.0s	○

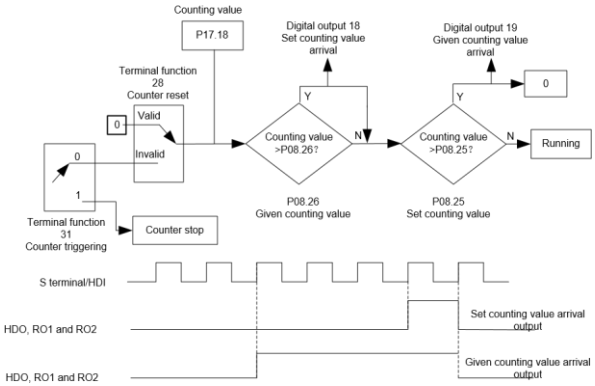
Function code	Name	Description	Default value	Modify
		 P24.10 is used to select the valid auxiliary motor. 0: No auxiliary motor 1: Auxiliary motor 1 valid 2: Auxiliary motor 2 valid 3: Auxiliary motor 1 and 2 valid Setting range of P24.11: 0.0–3600.0s Setting range of P24.12: 0.0–3600.0s		

3 Basic Operation Instruction

3.1 Pulse counter

NLED200A series VFDs support pulse counter which can input counting pulse through HDI terminal. When the actual length is longer than or equal to the set length, the digital output terminal can output length arrival pulse signal and the corresponding length will be cleared automatically.





4 Fault Tracking

4.1 What this chapter contains

This chapter describes how to reset faults and view fault history. It also lists all alarm and fault messages including the possible cause and corrective actions.

	✧ **Only qualified electricians are allowed to maintain the VFD. Read the safety instructions in chapter Safety precautions before working on the VFD.**

4.2 Alarm and fault indications

Fault is indicated by LEDs. See ***Operation Procedure***. When TRIP light is on, an alarm or fault message on the panel display indicates abnormal VFD state. Using the information reference in this chapter, most alarm and fault cause can be identified and corrected. If not, contact NEL office.

4.3 How to reset

The VFD can be reset by pressing the keypad key STOP/RST, through digital input, or by switching the power light. When the fault has been removed, the motor can be restarted.

4.4 Fault history

Fault code	Fault type	Possible cause	What to do
OUt1	IGBT Ph-U fault	●The acceleration is too fast ●IGBT module fault ●Misacts caused by interference ●The connection of the driving wires is not good, ●Grounding is not properly	●Increase acceleration time ●Change the power unit ●Check the driving wires ●Inspect external equipment and eliminate interference
OUt2	IGBT Ph-V fault		
OUt3	IGBT Ph-W fault		
OC1	Over-current when acceleration	●The acceleration or deceleration is too fast	●Increase the ACC time ●Check the input power

Function codes P07.27–P07.32 store 6 recent faults. Function codes P07.33–P07.40, P07.41– P7.48 and P07.49–P07.56 show drive operation data when the latest 3 faults occurs.

4.5 Fault instruction and solution

Do as the following after the VFD fault:

1. Check to ensure there is nothing wrong with the keypad. If not, please contact local NEL office.

2. If there is nothing wrong, please check P07 and ensure the corresponding recorded fault parameters to confirm the real state when the current fault occurs by all parameters.

3. See the following table for detailed solution and check the corresponding abnormal state.

4. Eliminate the fault and ask for relative help.

5. Check to eliminate the fault and carry out fault reset to run the VFD.

Fault code	Fault type	Possible cause	What to do
OC2	Over-current when deceleration	●The voltage of the grid is too low	●Select the VFD with a larger power

OC3	Over-current when constant speed running	●The power of the VFD is too low ●The load transients or is abnormal ●The grounding is short circuited or the output is phase loss ●There is strong external interference ●The overvoltage stall protection is not open	●Check if the load is short circuited (the grounding short circuited or the wire short circuited) or the rotation is not smooth ●Check the output configuration. ●Check if there is strong interference ●Check the setting of relative function codes
OV1	Over-voltage when acceleration	●The input voltage is abnormal ●There is large energy feedback ●No braking components ●Braking energy is not open	●Check the input power ●Check if the DEC time of the load is too short or the VFD starts during the rotation of the motor or it needs to add the dynamic braking components ●Install the braking components ●Check the setting of relative function codes
OV2	Over-voltage when deceleration		
OV3	Over-voltage when constant speed running		
UV	DC bus Under-voltage	●The voltage of the power supply is too low ●The overvoltage stall protection is not open	●Check the input power of the supply line ●Check the setting of relative function codes
OL1	Motor overload	●The voltage of the power supply is too low ●The motor setting rated current is incorrect ●The motor stall or load transients is too strong	●Check the power of the supply line ●Reset the rated current of the motor ●Check the load and adjust the torque lift
OL2	VFD overload	●The acceleration is too fast ●Reset the rotating motor ●The voltage of the power supply is too low ●The load is too heavy ●The motor power is too small	●Increase the ACC time ●Avoid the restarting after stopping ●Check the power of the supply line ●Select a VFD with bigger power ●Select a proper motor

Fault code	Fault type	Possible cause	What to do
OL3	Electrical overload	●The VFD will report overload pre-alarm according to the set value	●Check the load and the overload pre-alarm point.
SPI	Input phase loss	●Phase loss or fluctuation of input R,S,T	●Check input power ●Check installation distribution
SPO	Output phase loss	●U,V,W phase loss input(or serious asymmetrical three phase of the load)	●Check the output distribution ●Check the motor and cable
OH1	Rectify overheat	●Air duct jam or fan damage ●Ambient temperature is too high ●The time of overload running is too long	●Clean the air duct or the fan ●Reduce the ambient temperature
OH2	IGBT overheat		
EF	External fault	●SI external fault input terminals action	●Check the external device input
CE	Communication error	●The baud rate setting is incorrect ●Fault occurs to the communication wiring. ●The communication address is wrong ●There is strong interference to the communication	●Set proper baud rate ●Check the communication connection distribution ●Set proper communication address ●Chang or replace the connection distribution or improve the anti-interference capability
ItE	Current detection fault	●The connection of the control board is not good ●Hall components is broken ●The modifying circuit is abnormal	●Check the connector and re-plug ●Change the hall ●Change the main control panel

tE	Auto tuning fault	●The motor capacity does not comply with the VFD capability ●The rated parameter of the motor does not set correctly. ●The offset between the parameters auto tuning and the standard parameter is huge ●Auto tune overtime	●Change the VFD model ●Set the rated parameter according to the motor nameplate ●Empty the motor load and re-identify ●Check the motor connection and set the parameter. ●Check if the upper limit frequency is above 2/3 of the rated frequency.

Fault code	Fault type	Possible cause	What to do
EEP	EEPROM fault	●Error of controlling the write and read of the parameters ●Damage to EEPROM	●Press STOP/RST to reset ● ge the main c panel
PIDE	PID feedback fault	●PID feedback offline ●PID feedback source disappear	●Check the PID feedback signal ●Check the PID feedback source
bCE	Braking unit fault	●Braking circuit fault or damage to the braking pipes ●The external braking resistor is not sufficient	●Check the braking unit and change new braking pipe ●Increase the braking resistor
ETH1	Grounding shortcut fault 1	●The output of the VFD is short circuited with the ground ●There is fault in the current detection circuit ●The actual motor power sharply differs from the VFD power.	●Check if the connection of the motor is normal or not ●Change the hall ●Change the main control panel ●Set motor parameters correctly.
ETH2	Grounding shortcut fault 2		
dEu	Velocity deviation fault	●The load is too heavy or stalled	●Check the load and ensure it is normal ●Increase the detection time ●Check whether the control parameters are normal

STo	Maladjustment fault	●The control parameters of the synchronous motors not set properly ●The auto tune parameter is not right ●The VFD is not connected to the motor	●Check the load and ensure it is normal ●Check whether the control parameter is set properly or not ●Increase the maladjustment detection time
END	Time reach of factory setting	●The actual running time of the VFD is above the internal setting running time	●Ask for the supplier and adjust the setting running time
PCE	Keypad communication fault	●The connection of the keypad wires is not good or broken ●The keypad wire is too long and affected by strong	●Check the keypad wires and ensure whether there is mistake ●Check the environment and avoid the interference

Fault code	Fault type	Possible cause	What to do
		interference ●There is circuit fault on the communication of the keypad and main board	source ●Change the hardware and ask for service
DNE	Parameters downloading fault	●The connection of the keypad wires is not good or broken ●The keypad wire is too long and affected by strong interference ● There is mistake on the data storage of the keypad	●Check the keypad wires and ensure whether there is mistake ●Change the hardware and ask for service ●Repack-up the data in the keypad
LL	Electronic underload fault	●The VFD will report the underload pre-alarm according to the set value	●Check the load and the underload pre-alarm point

4.5.1 Other states

Fault code	Fault type	Possible cause	What to do
PoFF	System power off	System power off or the bus voltage is too low	Check the grid
	Communication failure between the keypad and main control board	The keypad is not connected correctly	Check the installation environment

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