NEL
INNOVATION MATTERS
ELECTRONICS

NEL
INVERTER
VFD

USER MANUAL

NL E5 Series

High Performance Universal Inverter

4kw to 1000kw

BRIEF INTRODUCTION

Naqsh-e-Lasani Group of Industries 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 4kw to 1000kw for various general as well as specific industrial applications. Our famous models are NL E5, NLED200A, NL-E100, NL G5, NL3000, NL V6-M, NLD5-A, NL 1580, NL-B5, NLC5

WHY NEL VFD?

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

Naqsh-e-Lasani Electronics

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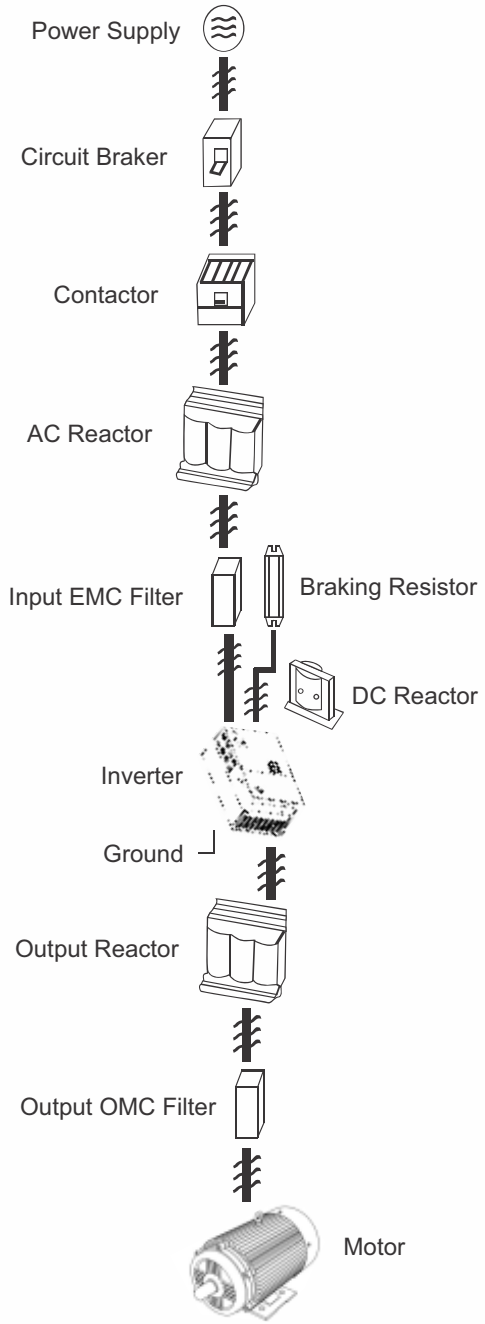
Diagram


Power Supply
Circuit Braker
Contactor
AC Reactor
Input EMC Filter
Braking Resistor
DC Reactor
Inverter
Ground
Output Reactor
Output OMC Filter
Motor

AC 400 volt	PB-04	100
	PB-05	50 Hz
DC 750 volt	PB-06	01
	PB-07	150

سولر کنیکشن (صرف سولرکے لیے)

DC 750 volt	PB-04	100
	PB-05	50 Hz
	PB-06	01
	PB-07	150

Terminal Configuration

(+)	P1	(-)	R	S	T

	U	V	W
	MOTOR		

Main circuit terminals (22kW and above)

The function of main circuit terminals are described as followings:

Terminal Symbol	Function Description
R, S, T	Termnials of 3 phase AC input
(+), (-)	Spare terminals of external braking unit
(+), PB	Spare terminals of external DC reactor
P1, (+)	Spare terminals of external DC reactor
(-)	Terminal of negative DC bus
U, V, W	Terminal of 3 phase AC output
⏚	Terminal of ground
(+)	Terminal of positive DC bus

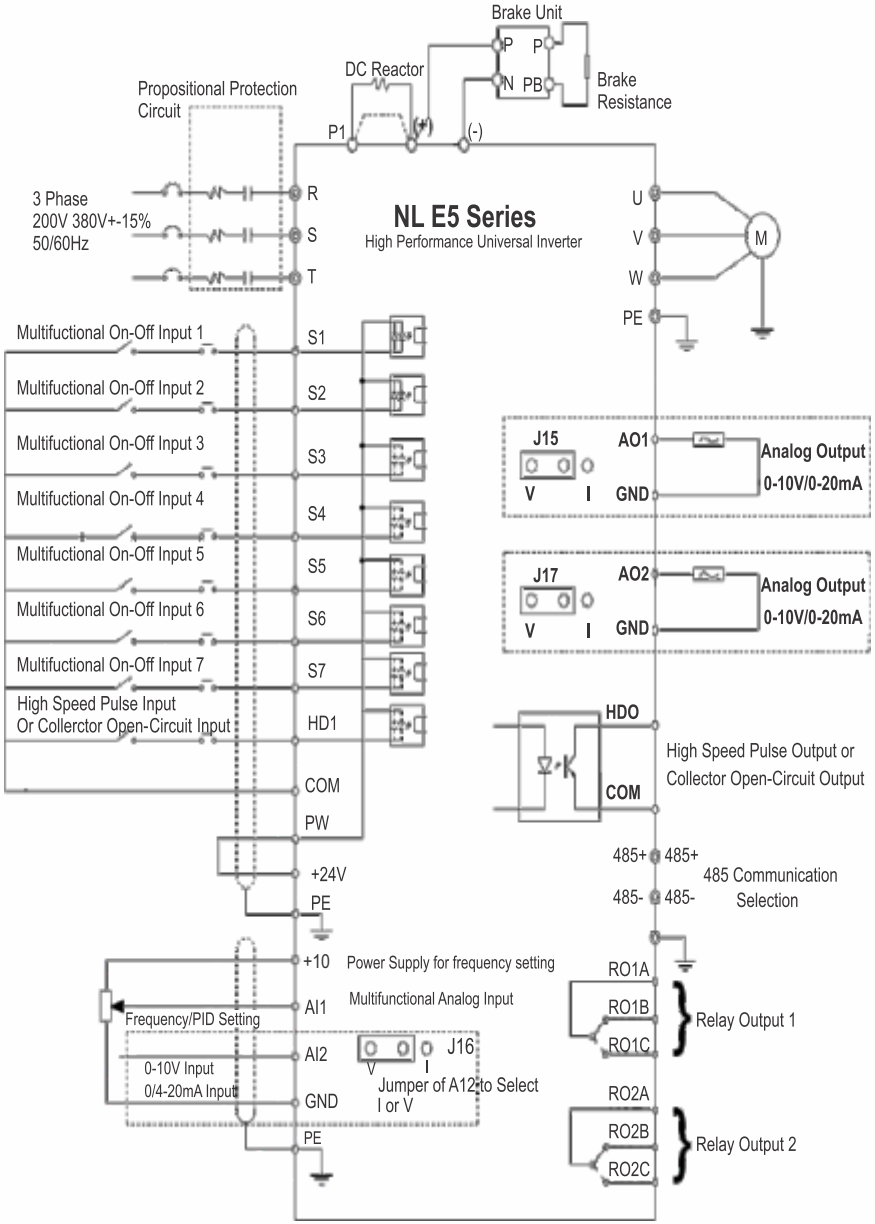
Control Circuit Terminal

485+	485-	+10V	GND	S1	S2	S3	S4	S5	S6	S7
GND	Ai1	Ai2	Ao1	Ao2	COM	PW	+24V	COM	HDI	HDO

RO1A	RO1B	RO1C
RO2A	RO2B	RO2C

Figure 4.12 Control circuit terminals.

Wiring Diagram



ڈبل سپلائی انورٹر (سولر+ واپڈا شیرنگ)

DC 430 volt	PB-04	70
	PB-05	10 Hz
	PB-06	01
	PB-07	135
DC 500-550 volt	PB-04	90
	PB-05	30 Hz
	PB-06	01
	PB-07	140
DC 550-750 volt	PB-04	100
	PB-05	40 Hz
	PB-06	01
	PB-07	145
DC 750-850 volt	PB-04	110
	PB-05	50 Hz
	PB-06	01
	PB-07	150

AC 400 volt	PB-04	100
DC 750 volt	PB-05	50 Hz
	PB-06	01
	PB-07	150

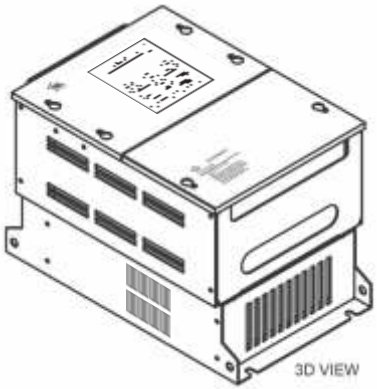
Only for Solar Connection

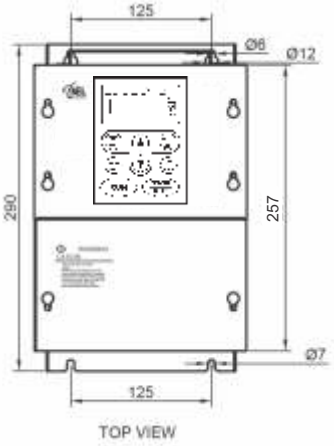
DC 750 volt	PB-04	100
	PB-05	50 Hz
	PB-06	01
	PB-07	150

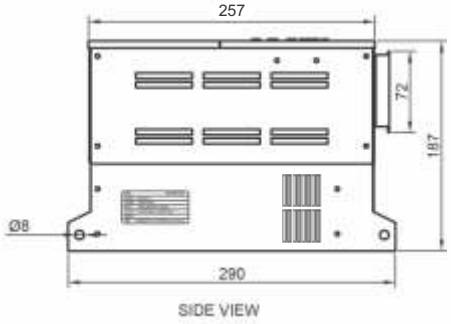
NL E5 4.0kw - 5.5kw

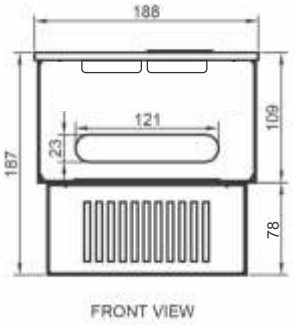
220V/440V

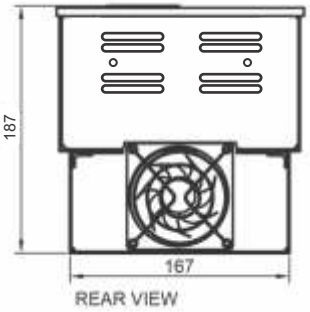
Physical Appearance and Dimensions







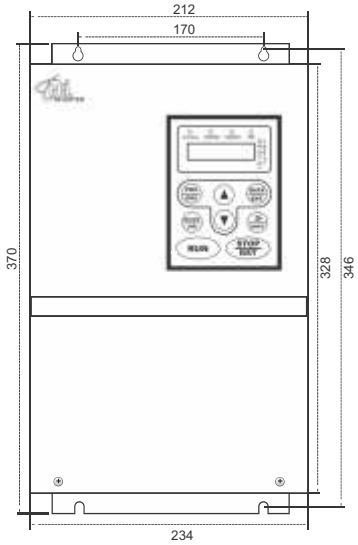


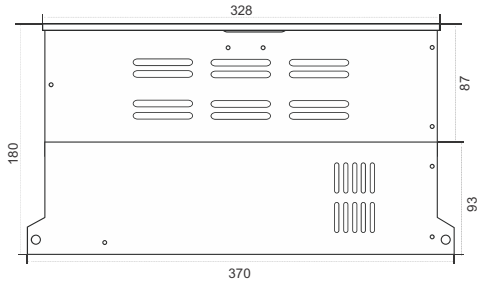


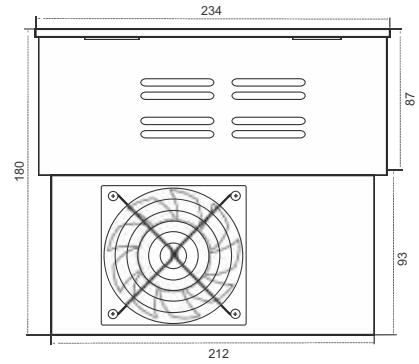
NL E5 7.5kw - 11kw - 15kw

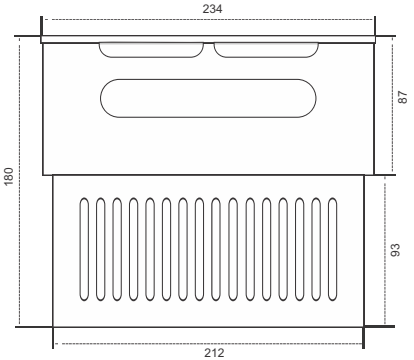
220V/440V

Physical Appearance and Dimensions



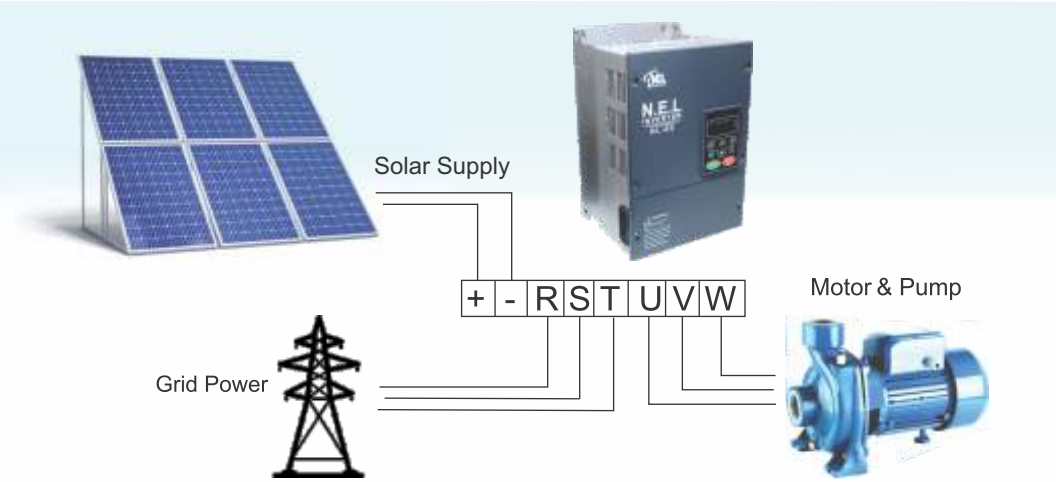






Dual Source Connection Solar & Wapda

Connection of Peripheral/Optional Devices



DC 430 volt	PB-04	70
	PB-05	10 Hz
	PB-06	01
	PB-07	135
DC 500-550 volt	PB-04	90
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	PB-06	01
	PB-07	140
DC 550-750 volt	PB-04	100
	PB-05	40 Hz
	PB-06	01
	PB-07	145
DC 750-850 volt	PB-04	110
	PB-05	50 Hz
	PB-06	01
	PB-07	150

Fault Code	Fault Type	Reason	Solution
END	Time reaches of factory setting	1.Trial time arrival	1. Ask for service
OL3	Over torque	1. The acceleration is too fast 2. Reset the rotating motor 3. The voltage of the power supply is too low. 4. The load is too heavy.	1. Increase the ACC time 2. Avoid the restarting after stopping. 3. Check the power of the supply line 4. Select an inverter with bigger power 5. Adjust Pb.11 to a proper value

Please contact **NEL Inverters**

Common Faults and Solutions

Inverter may have following faults or malfunctions during operation, please refer to the following solutions.

No display after power on:

Inspect whether the voltage of power supply is the same as the inverter rated voltage or not with multi-meter. If the power supply has problem, inspect and solve it.

Inspect whether the three-phase rectify bridge is in good condition or not. If the rectification bridge is burst out, ask for support.

Check the CHARGE light. If the light is off, the fault is mainly in the rectify bridge or the buffer resistor. If the light is on, the fault may be lies in the switching power supply. Please ask for support.

Power supply air switch trips off when power on:

Inspect whether the input power supply is grounded or short circuit. Please solve the problem.

Inspect whether the rectify bridge has been burnt or not. If it is damaged, ask for support.

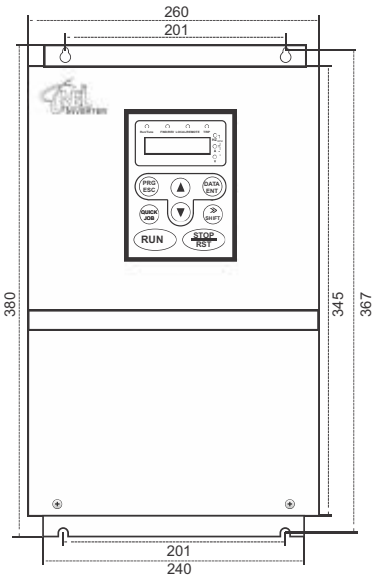
Motor doesn't move after inverter running:

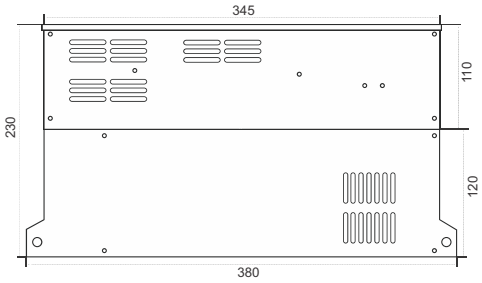
Inspect if there is balanced three-phase output among U, V, and W. If yes, then motor could be damaged, or mechanically locked. Please solve it

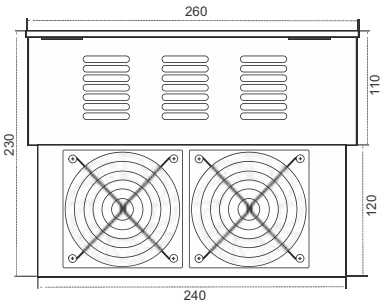
NL E5 18kw

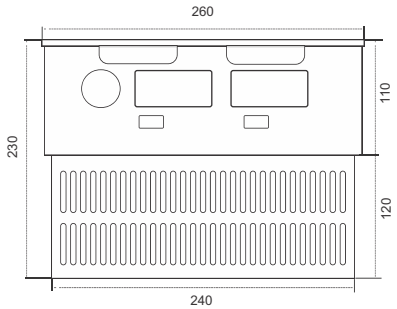
380V/440V

Physical Appearance and Dimensions





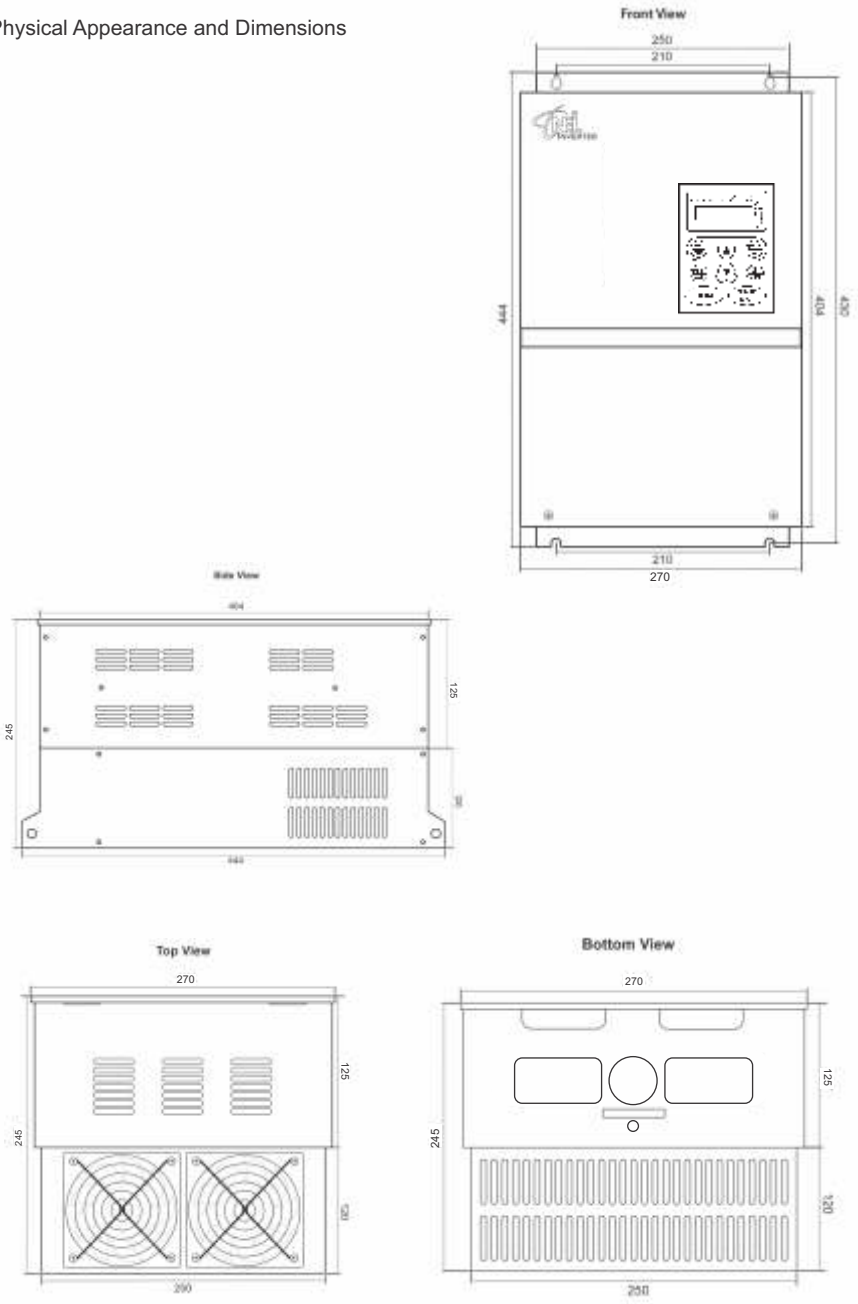




NL E5 22kw - 30kw

380V/440V

Physical Appearance and Dimensions



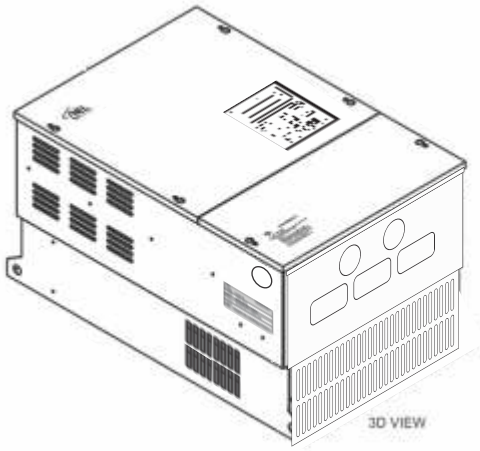
Fault Code	Fault Type	Reason	Solution
		Assistant power is bad 2. Assistant power is damaged 3. Hoare components is broken 4. The modifying circuit is abnormal.	3. Ask for service 4. Ask for service
TE	Auto tuning fault	1. The motor capacity does not comply with the inverter capability 2. The rated parameter of the motor does not set correctly. 3. The offset between the parameters from auto tune and the standard parameter is huge 4. Auto tune overtime	1.Change the inverter model 2. Set the rating parameters according to the nameplate of the motor 3. Empty the motor and identify again 4.Check the motor wiring and set the parameters
EEP	EEPROM fault	1. Error of controlling the write and read of the parameters 2. Damage to EEPROM	1. Press STOP/RST to reset 2. Ask for service
PIDE	PID feedback fault	1. PID feedback offline 2. PID feedback source disappear	1. Check the PID feedback signal wires 2. Check PID feedback source
BCE	Braking unit fault	1. Braking circuit fault or damage to the braking pipes 2.The external braking resistor is a little low	1. Check the braking unit and change new braking pipes 2. Increase the braking resistor

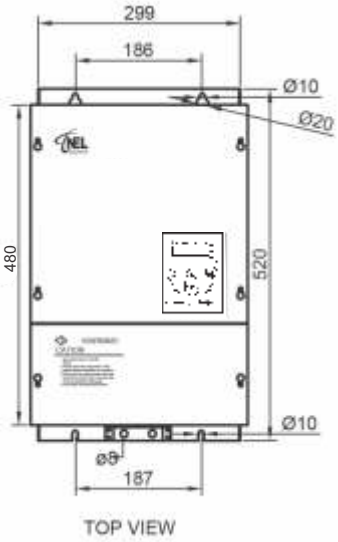
Fault Code	Fault Type	Reason	Solution
		asymmetrical three phase of the load)	2. Check the motor and cable
OH1	Rectify overheat	1. Sudden overcurrent of the inverter 2. There is direct or indirect short circuit between output 3 phase	1. Refer to the overcurrent solution 2. Redistribute 3. Dredge the wind channel or change the fan 4. Low the ambient temperature 5. Check and reconnect 6. Ask for service 7. Ask for service 8. Ask for service
OH2	IGBT overheat	3. Air duct jam or fan damage 4. Ambient temperature is too high. 5. The wiring of the control panel or plug-ins are loose 6. The assistant power supply is damaged and the drive voltage is undervoltage 7. The bridge arm of the power module is switched on 8. The control panel is abnormal	
EF	External fault	S1: External fault input terminal take effect.	1. Check the external device input
CE	Communication fault	1. The baud rate setting is incorrect. 2.Communication fault 3. The communication is off for a long time.	1. Set proper baud rate 2. Press STOP/RST to reset and ask for help 3. Check the communication connection distribution
ITE	Current detection fault	1. The connection of the control board is not good	1. Check and reconnect 2. Ask for service

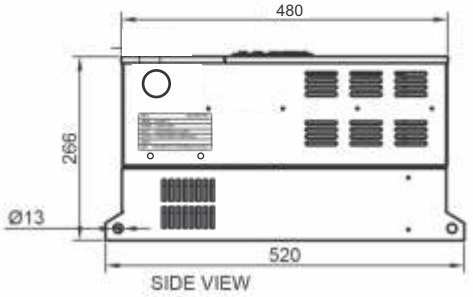
NL E5 37kw - 45kw

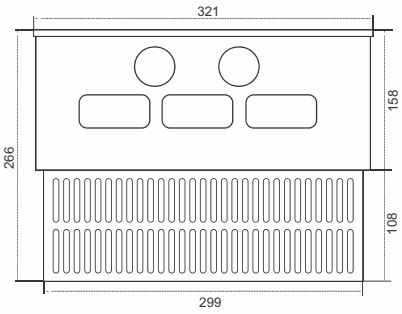
380V/440V

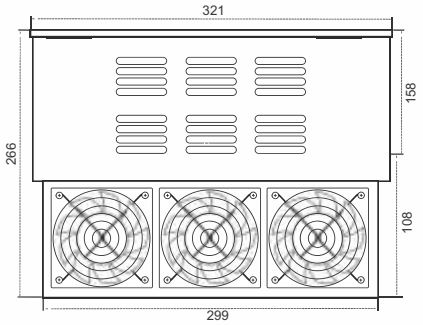
Physical Appearance and Dimensions







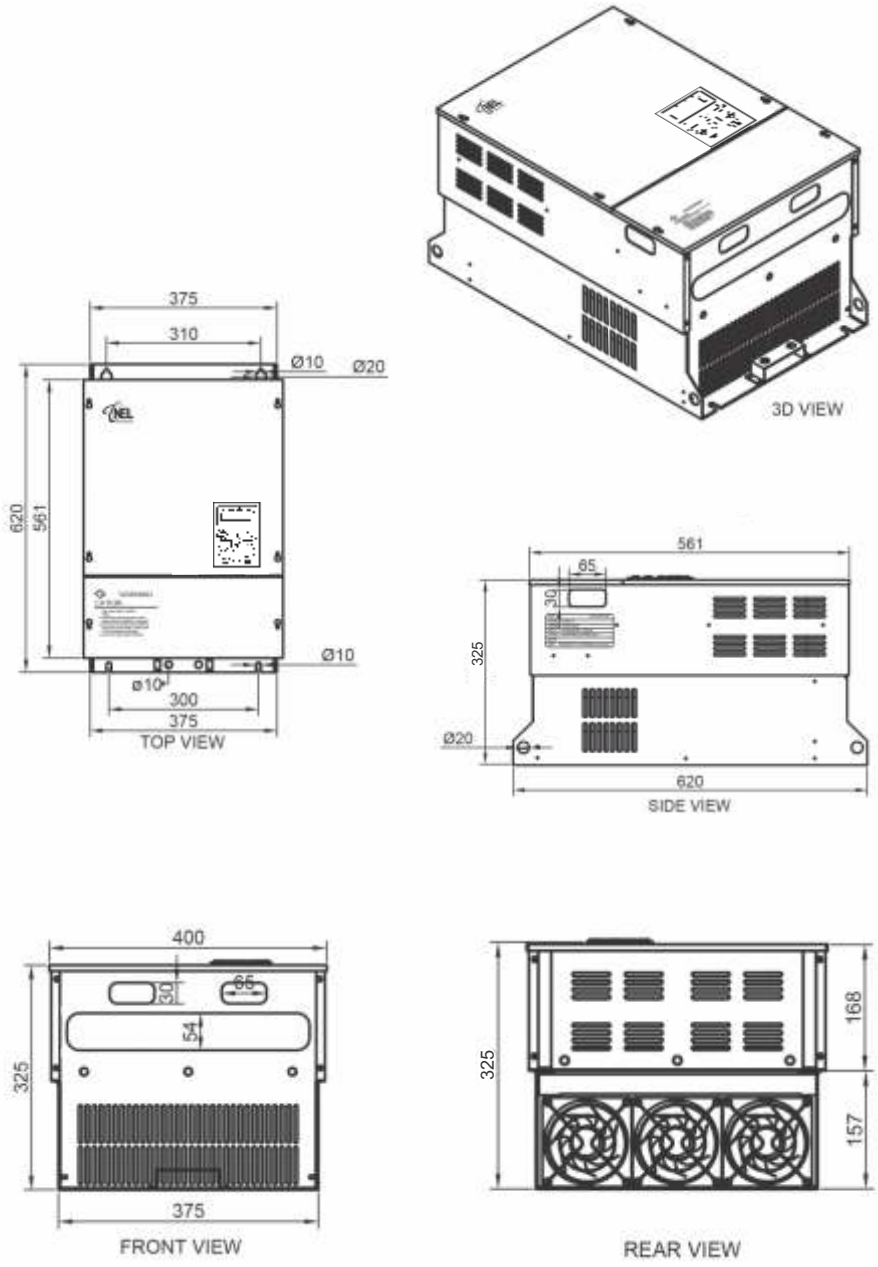




NL E5 55kw - 75kw - 90kw

380V/440V

Physical Appearance and Dimensions



Fault Code	Fault Type	Reason	Solution
		power loss.	
OV2	Over-voltage when deceleration	1. Dec time is too short. 2.The inertia of the load is big. 3.The input voltage is abnormal	1. Increase the Dec time 2. Increase the energy-consuming components 3. Check the input power
OV3	Over-voltage when constant speed running	1. The input voltage changes abnormally. 2. The inertia of the load is big.	1. Install the input reactor 2. Add proper energy-consuming components
UV	DC bus Under-voltage	1. The voltage of the grid is low	1.Check the input power supply of the grid
OL1	Motor overload	1. The voltage of the power supply is too low. 2. The motor setting rated current is incorrect. 3. The motor stall or load transients is too strong. 4.The power of the motor is too big.	1. Check the power of the supply line 2. Reset the rated current of the motor 3. Check the load and adjust the torque lift 4. Select a proper motor.
OL2	Inverter overload	1. The acceleration is too fast 2. Reset the rotating motor 3. The voltage of the power supply is too low. 4. The load is too heavy.	1. Increase the ACC time 2. Avoid the restarting after stopping. 3. Check the power of the supply line 4. Select an inverter with bigger power
SPI	Input phase loss	Phase loss or fluctuation of input R, S and T	1. Check input power 2. Check installation distribution
SPO	Output phase loss	U, V and W phase loss input (or serious	1. Check the output distribution

TROUBLE SHOOTING

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

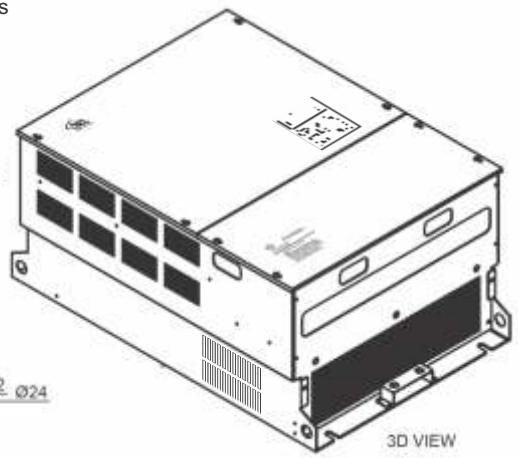
Fault and Trouble shooting

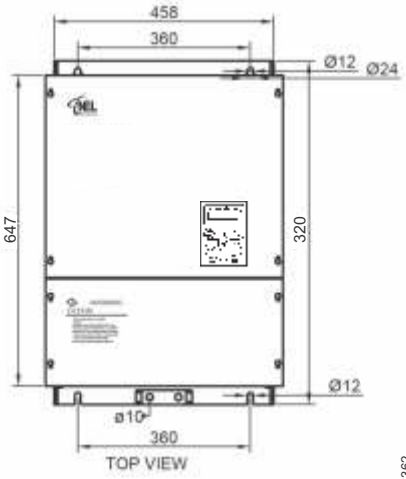
Fault Code	Fault Type	Reason	Solution
OUt1	IGBT Ph-U fault	1. Acc time is too short. 2. IGBT module fault. 3. Malfunction caused by interference. 4. Grounding is not properly.	1. Increase Acc time. 2. Ask for support. 3. Inspect external equipment and eliminate interference.
OUt2	IGBT Ph-V fault		
OUt3	IGBT Ph-W fault		
OC1	Over-current when acceleration	1. Acc time is too short. 2 The voltage of the grid is too low. 3 The power of the inverter is too low.	1. Increase Acc time. 2. Check the input power 3. Select bigger capacity inverter.
OC2	Over-current when deceleration	1. Dec time is too short. 2. The torque of the load inertia is big. 3. The power of the inverter is too low.	1. Increase Dec time. 2.Install a proper energy consumption braking components 3. Select bigger capacity inverter.
OC3	Over-current when constant speed running	1 The load transients or is abnormal. 2 The voltage of the grid is too low. 3 The power of the inverter is too low.	1. Check the load or reduce the transient of the load 2. Check the input power supply 3. Select bigger capacity inverter.
OV1	Over-voltage when acceleration	1. The input voltage is abnormal 2. Restart the running motor after sudden	1 Check the input power 2. Avoid restart-up after stopping

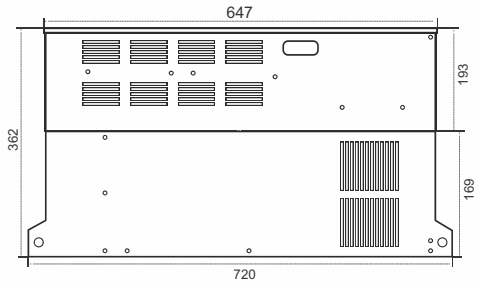
NL E5 110kw - 132kw

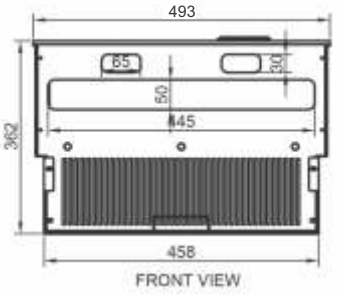
380V/440V

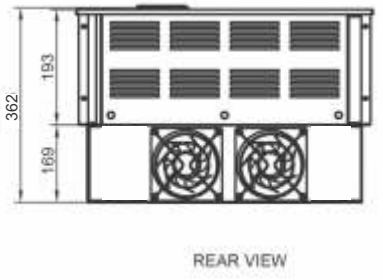
Physical Appearance and Dimensions







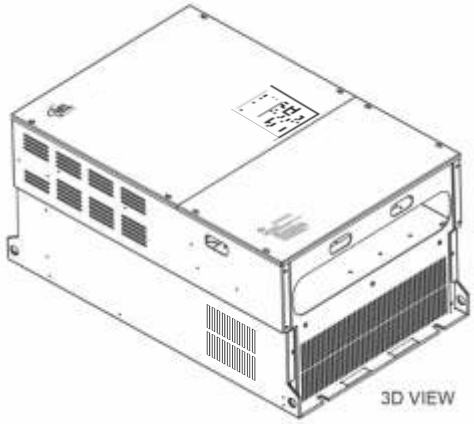


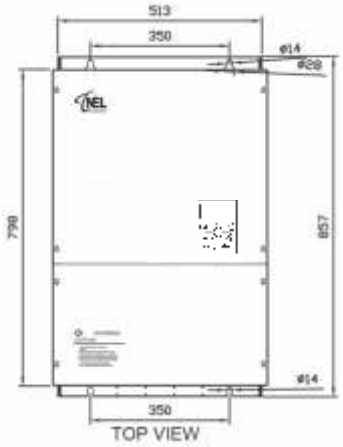


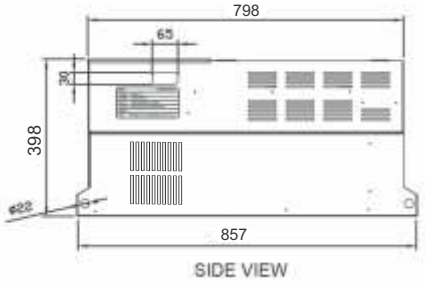
NL E5 160kw - 185kw - 200kw - 220kw

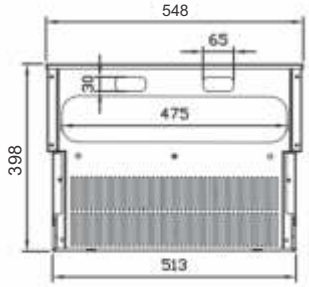
380V/440V

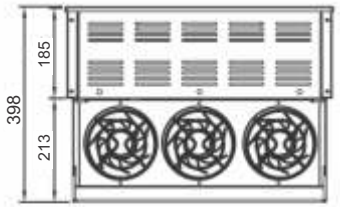
Physical Appearance and Dimensions











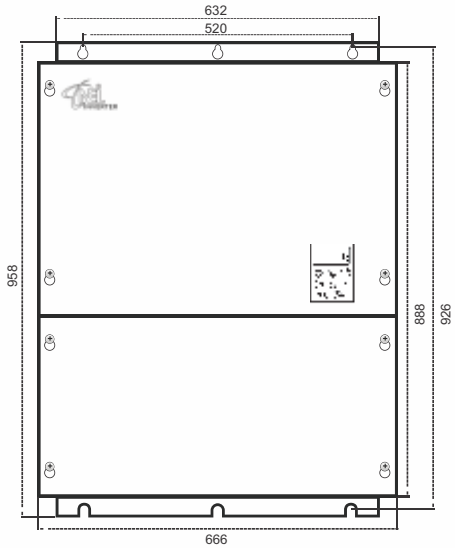
Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		Ten's place of LED 0: Reference not saved when power off 1: Reference saved when power off				
Pd Group: Supplementary Function						
PE Group: Factory Setting						

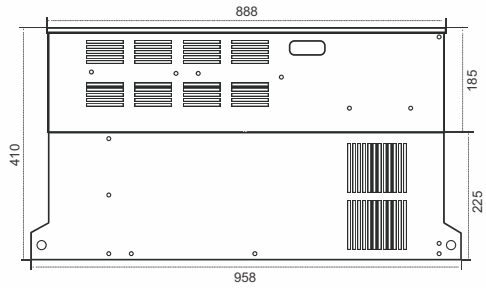
Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		2: RTU, 1 start bit, 8 data bits, odd parity check, 1 stop bit. 3: RTU, 1 start bit, 8 data bits, no parity check, 2 stop bits. 4: RTU, 1 start bit, 8 data bits, even parity check, 2 stop bits. 5: RTU, 1 start bit, 8 data bits, odd parity check, 2 stop bits.				
PC.03	Communication delay time	0~200ms	0~200	5ms		241.
PC.04	Communication timeout delay	0.0: Disabled 0.1~100.0s	0.0~100.0	0.0s		242.
PC.05	Communication error action	0: Alarm and coast to stop 1: No alarm and continue to run 2: No alarm but stop according to P1.06 (if P0.03=2) 3: No alarm but stop according to P1.06	0~3	1		243.
PC.06	Response action	Unit's place of LED 0: Response to writing 1: No response to writing	00~11	00		244.

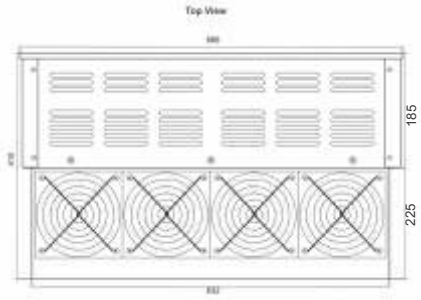
NL E5 250kw - 315kw

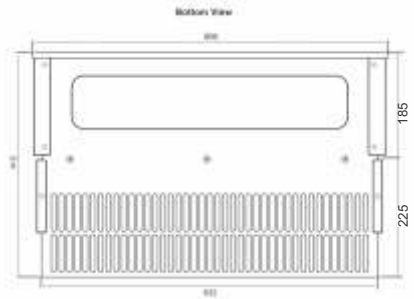
380V/440V

Physical Appearance and Dimensions





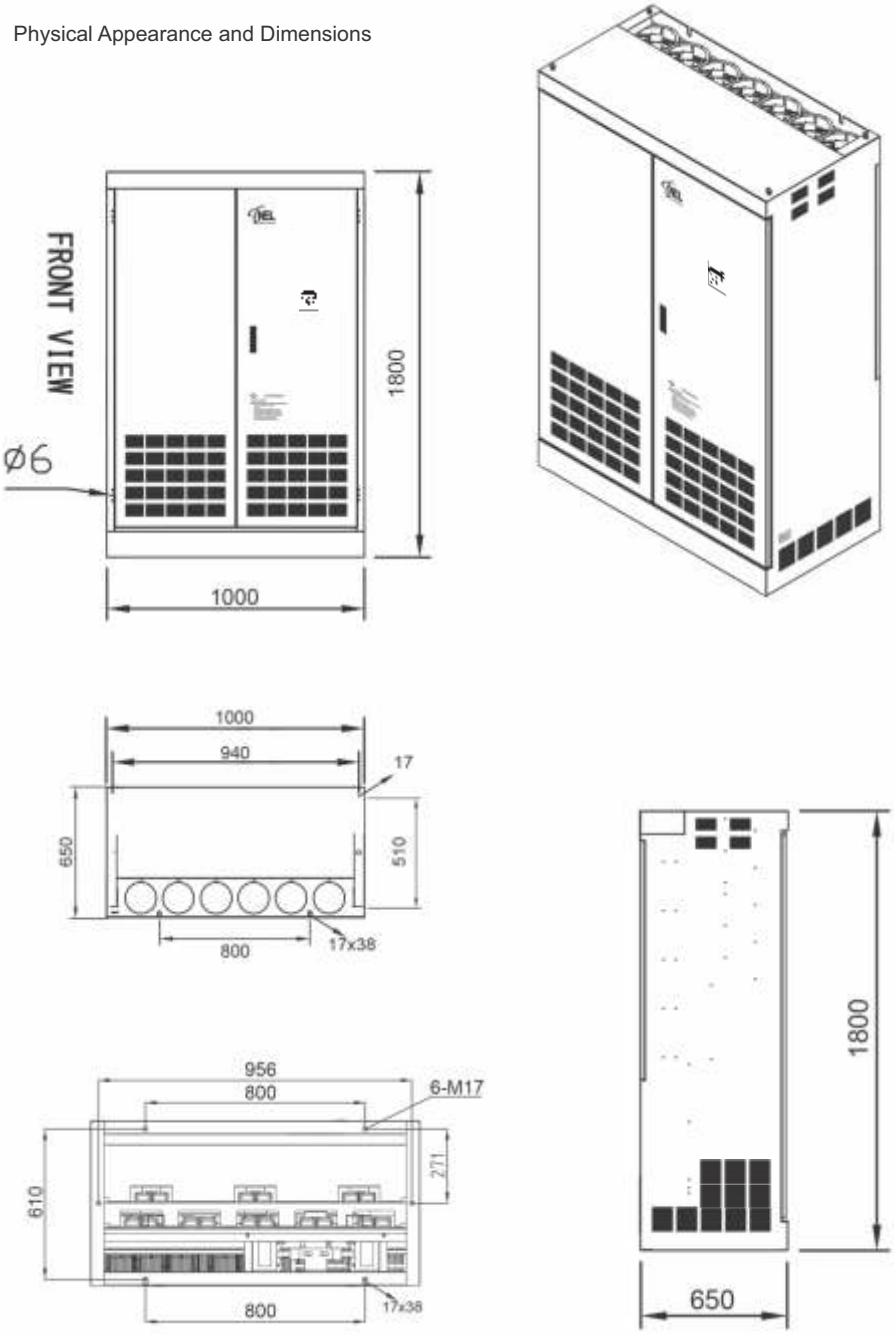




NL E5 355kw - 400kw - 450kw

380V/440V

Physical Appearance and Dimensions



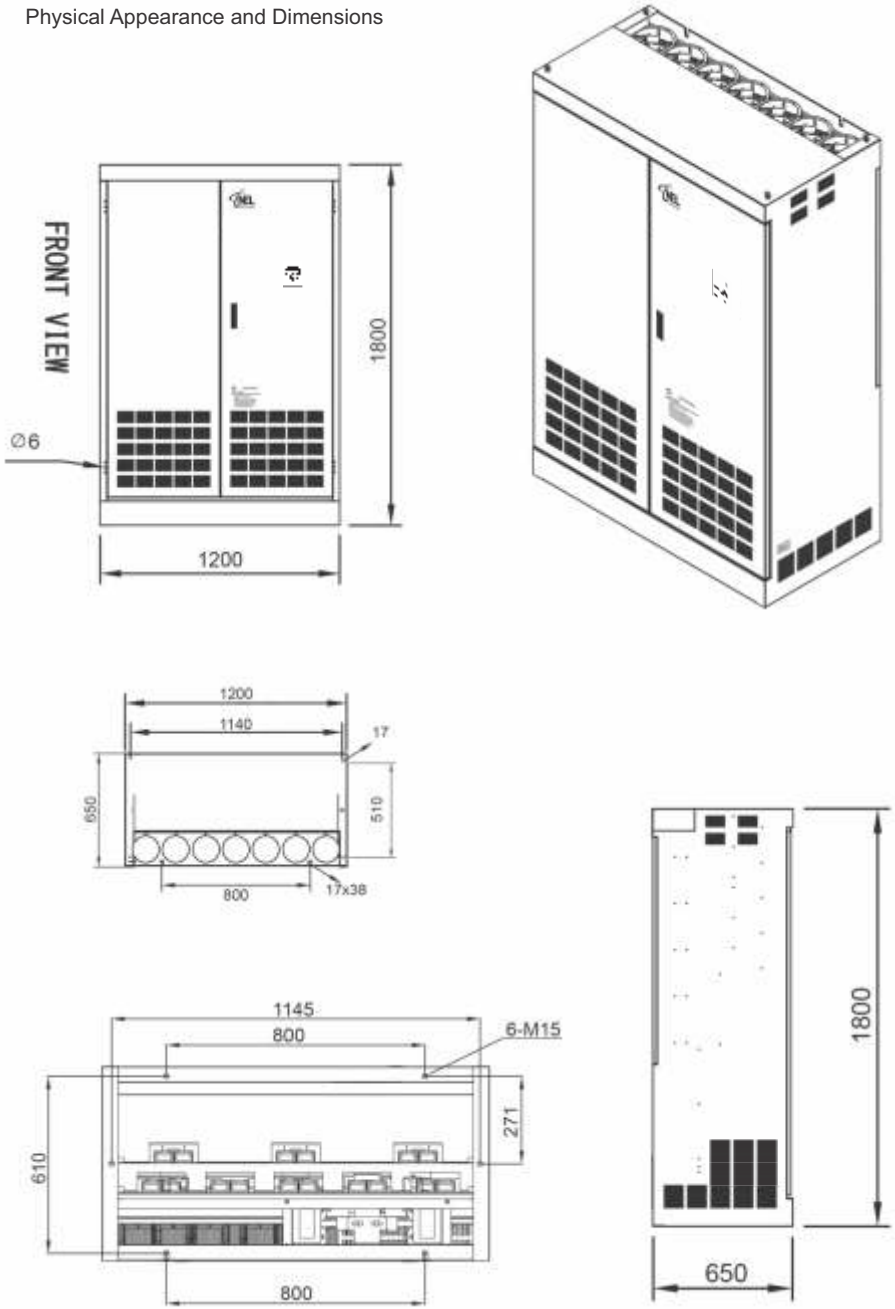
Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		4 Valid detection of Over torque during constant speed running, then warning and stop.				
Pb.12	Detection level of Over torque	10.0%~200.0%(relative to the rated current of the motor)	1.0~200.0	G model 150.0% P model:120.0%		234.
Pb.13	Detection time of Over torque	0.1~60.0s	0.0~60.0	0.1s		235.
Pb.14	Reserved					236.
Pb.15	Reserved					237.
PC Group: Serial Communication						
PC.00	Local address	0~247, 0 stands for the broadcast address	0~247	1		238.
PC.01	Baud rate selection	0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS	0~5	4		239.
PC.02	Data format	0: RTU, 1 start bit, 8 data bits, no parity check, 1 stop bit. 1: RTU, 1 start bit, 8 data bits, even parity check, 1 stop bit.	0~5	1		240.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
Pb.07	Over-voltage stall protection point	110~150%	110~150	120%		229.
Pb.08	Auto current limiting threshold	50~200%	50~200	G model 150.0% P model:120.0%		230.
Pb.09	Frequency decrease rate when current limiting	0.00~100.00Hz/s	0.00~100.00	10.00Hz/s		231.
Pb.10	Auto current limiting selection	0: Enabled 1: Disabled when constant speed	0~1	0		232.
Pb.11	Selection of Over torque (OL3)	0 No detection 1 Valid detection of Over torque during running, then continue running 2 Valid detection of Over torque during running, then warning and stop 3 Valid detection of Over torque during constant speed running, then continue running	0~4	1		233.

NL E5 500kw - 630kw

380V/440V

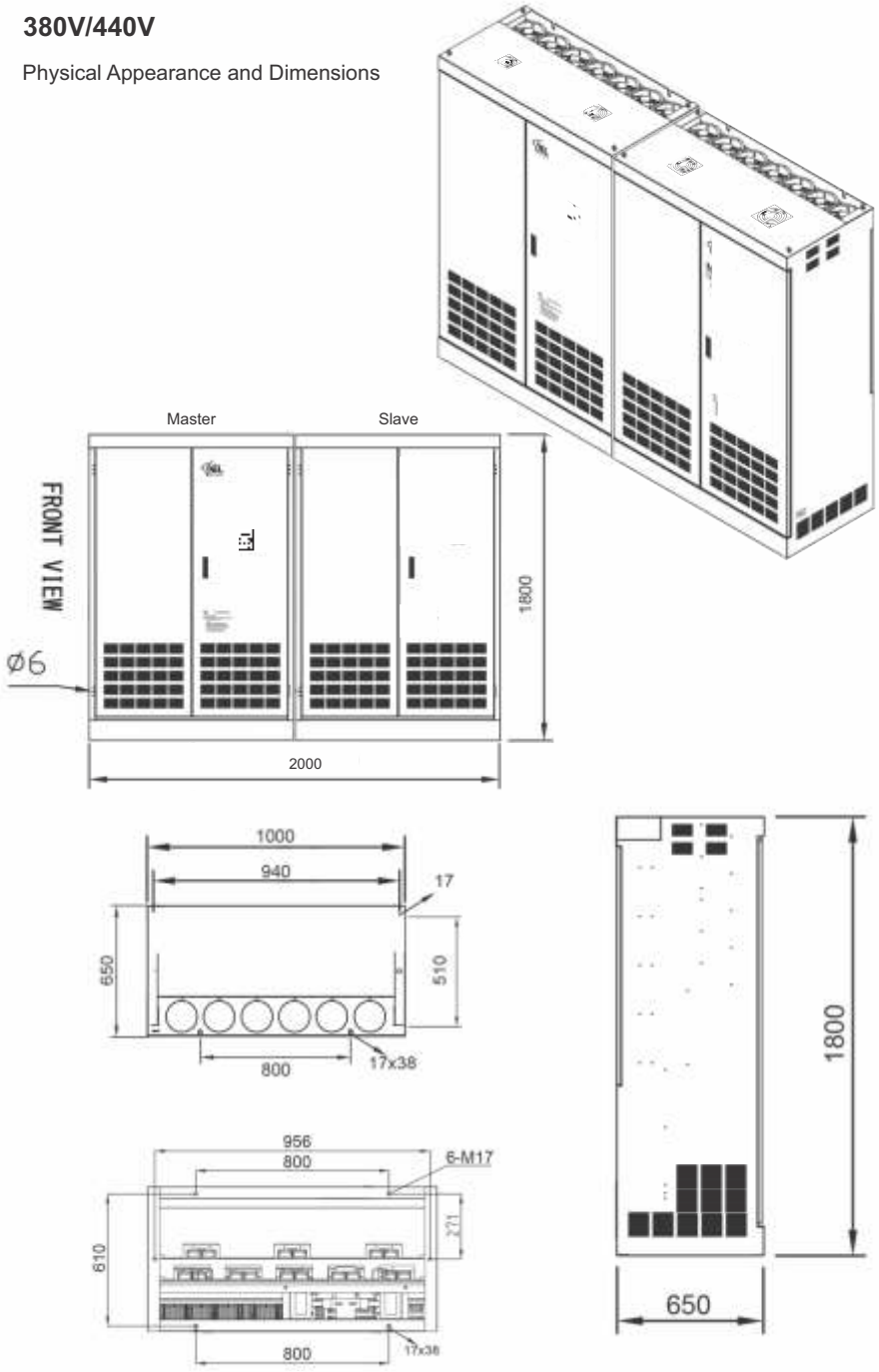
Physical Appearance and Dimensions



NL E5 800kw

380V/440V

Physical Appearance and Dimensions



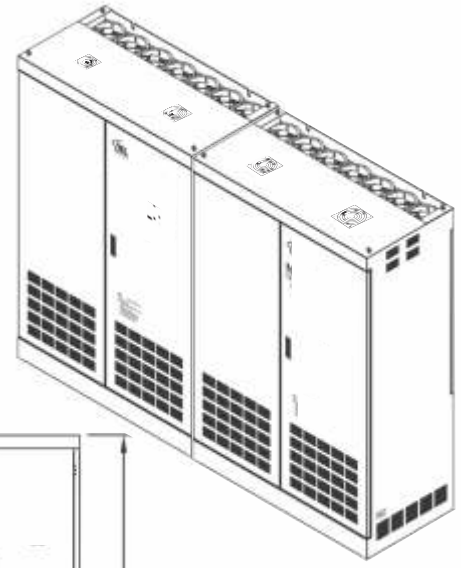
Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	selection	paused step				
PA.37	Time unit	0: Second 1: Minute	0~1	0		221.
PB Group: Protection Function						
Pb.00	Input phase-failure protection	0: Disable 1: Enable	0~1	1		222.
Pb.01	Output phase-failure protection	0: Disabled 1: Enabled	0~1	1		223.
Pb.02	Motor overload protection	0: Disabled 1: Normal motor(with low speed compensation) 2: Variable frequency motor(without low speed compensation)	0~2	2		224.
Pb.03	Motor overload protection current	20.0% ~ 120.0% (rated current of the motor)	20.0~120.0	100.0%		225.
Pb.04	Threshold of trip-free	70.0.0~110.0% (standard bus voltage)	70.0~110.0	80.0%		226.
Pb.05	Decrease rate of trip-free	0.00~P0.03 (the Max. frequency)	0.00~P0.03	0.00Hz/s		227.
Pb.06	Over-voltage stall protection	0: Disabled 1: Enabled	0~1	1		228.

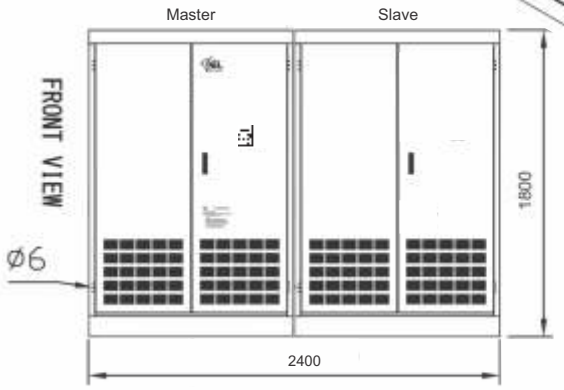
Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	speed 11		.0			
PA.25	11th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		209.
PA.26	Multi-step speed 12	-100.0~100.0%	-100.0~100.0	0.0%		210.
PA.27	12th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		211.
PA.28	Multi-step speed 13	-100.0~100.0%	-100.0~100.0	0.0%		212.
PA.29	13th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		213.
PA.30	Multi-step speed 14	-100.0~100.0%	-100.0~100.0	0.0%		214.
PA.31	14th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		215.
PA.32	Multi-step speed 15	-100.0~100.0%	-100.0~100.0	0.0%		216.
PA.33	15th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		217.
PA.34	ACC/DEC time selection for step 0~7	0~0XFFFF	0~0XFFFF	0		218.
PA.35	ACC/DEC time selection for step 8~15	0~0XFFFF	0~0XFFFF	0		219.
PA.36	Simple PLC restart	0: Restart from step 0 1: Continue from	0~1	0		220.

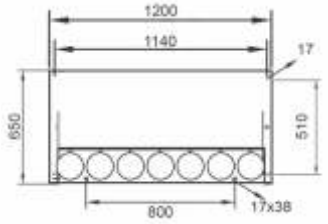
NL E5 1000kw

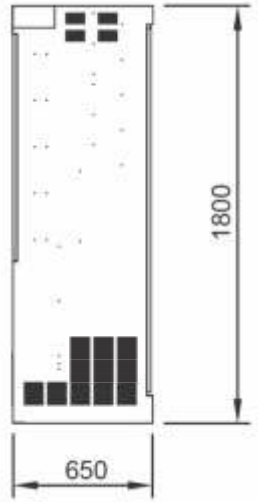
380V/440V

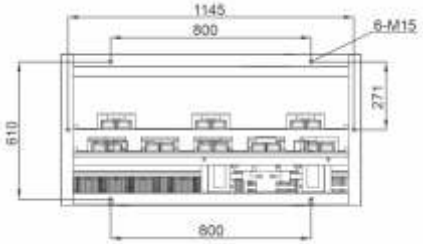
Physical Appearance and Dimensions











Dimensions of External Small Keypad

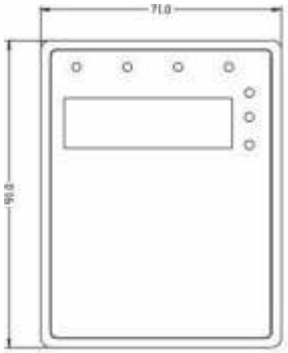


Figure A-9 Dimension of small keypad.

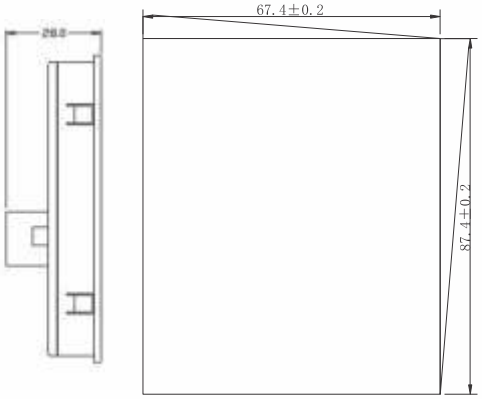


Figure A-10 Installation of small keypad

Dimensions of External Big Keypad

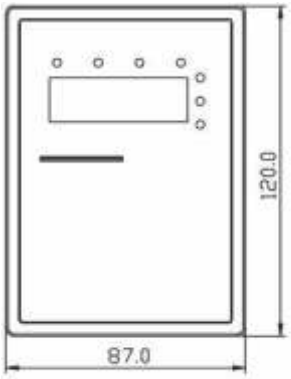


Figure A-11 Dimension ofbig keypad.

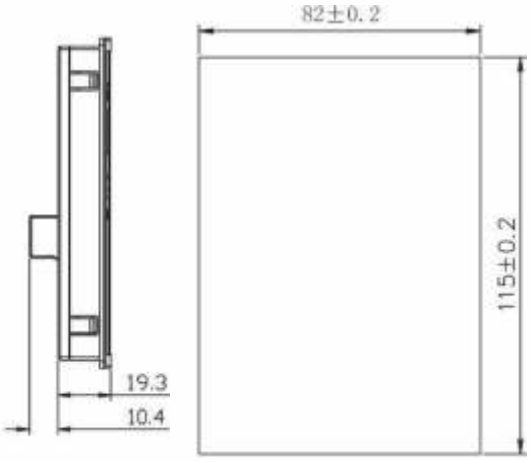


Figure A-12 Installation of big keypad

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	speed 4		.0			
PA.11	4th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		195.
PA.12	Multi-step speed 5	-100.0~100.0%	-100.0~100 .0	0.0%		196.
PA.13	5th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		197.
PA.14	Multi-step speed 6	-100.0~100.0%	-100.0~100 .0	0.0%		198.
PA.15	6th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		199.
PA.16	Multi-step speed 7	-100.0~100.0%	-100.0~100 .0	0.0%		200.
PA.17	7th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		201.
PA.18	Multi-step speed 8	-100.0~100.0%	-100.0~100 .0	0.0%		202.
PA.19	8th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		203.
PA.20	Multi-step speed 9	-100.0~100.0%	-100.0~100 .0	0.0%		204.
PA.21	9th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		205.
PA.22	Multi-step speed 10	-100.0~100.0%	-100.0~100 .0	0.0%		206.
PA.23	10th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		207.
PA.24	Multi-step	-100.0~100.0%	-100.0~100	0.0%		208.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	lost detecting time					
PA Group: Simple PLC and Multi-step Speed Control						
PA.00	Simple PLC mode	0: Stop after one cycle 1: Hold last frequency after one cycle 2: Circular run	0~2	0		184.
PA.01	Simple PLC status saving after power off	0: Disabled 1: Enabled	0~1	0		185.
PA.02	Multi-step speed 0	-100.0~100.0%	-100.0~100.0	0.0%		186.
PA.03	0th Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		187.
PA.04	Multi-step speed 1	-100.0~100.0%	-100.0~100.0	0.0%		188.
PA.05	1st Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		189.
PA.06	Multi-step speed 2	-100.0~100.0%	-100.0~100.0	0.0%		190.
PA.07	2nd Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		191.
PA.08	Multi-step speed 3	-100.0~100.0%	-100.0~100.0	0.0%		192.
PA.09	3rd Step running time	0.0~6553.5s(h)	0.0~6553.5	0.0s		193.
PA.10	Multi-step	-100.0~100.0%	-100.0~100	0.0%		194.

OPERATION

Keypad Description

- **Keypad schematic diagram**

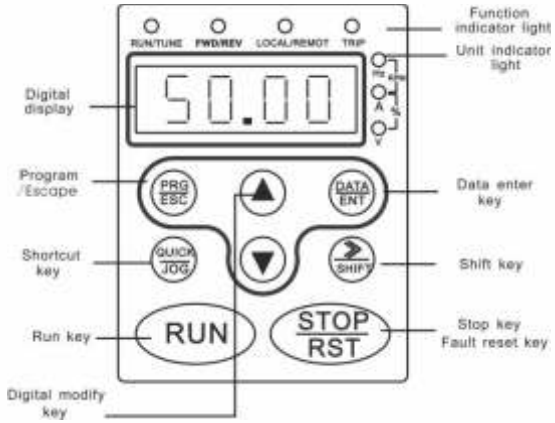


Figure 5.1 Keypad schematic diagram.

- **Function key description**

Key	Name	Function Description
PRG ESC	Program/Escape	Enter or escape from the first level menu,
DATA ENT	Data enter Key	Progressively enter menu and confirm parameters.
▲	Digital modify key	Progressively increase data or function codes.
▼	Digital modify key	Progressive decrease data or function codes.
>> SHIFT	Shift Key	In parameter setting mode, press this button to select the bit to be modified. In other modes, cyclically displays parameters by right shift
RUN	Run Key	Start to run the inverter in keypad control mode.
STOP RST	Stop/Reset Key	In running status, restricted by P7.04, can be used to stop the inverter. When fault alarm, can be used to reset the inverter without any restriction.

Key	Name	Function Description
QUICK JOG	Shortcut Key	Determined by Function Code P7.03: 0: Display Status Switching 1: Jog Operation 2: Switch between forward and reverse 3: Clear the UP/DOWN terminals settings. 4: Quick debugging mode
RUN + STOP/RST	Combination Key	Pressing the RUN and STOP/RST at the same time can achieve inverter coast to stop.

Indicator light description

Fuction Indicator Light Description

Function Indicator	Description
RUN/TUNE	Extinguished: stop status Flicking: parameter auto tuning Status Light on: operating status
FWD/REV	Extinguished: forward operation Light on: reverse operation.
LOCAL/REMOT	Extinguished: keypad control Flickering: terminal control Light on: communication control
TRIP	Extinguished: normal operation status Flickering: overload pre-warning status Light on: fault of the inverter

Unit Indicator Light Description

Unit Indicator	Description
Hz	Frequency Unit
A	Current Unit
V	Voltage Unit
RPM	Rotating Speed Unit
%	Percentage

Digital Display have 5 digit LED, which can display all kinds of monitoring data and alarm codes such as reference frequency, output frequency and so on.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	source selection	1: AI1 2: AI2 3: HDI 4: Multi-step 5: Remote communication				
P9.01	Keypad PID preset	0.0%~100.0%	0.0~100.0	0.0%		174.
P9.02	PID feedback source selection	0: AI1 1: AI2 2: AI1+AI2 3: HDI 4: Communication	0~3	0		175.
P9.03	PID output characteristic	0: Positive 1: Negative	0~1	0		176.
P9.04	Proportional gain (Kp)	0.00~100.00	0.00~100.00	0.10s		177.
P9.05	Integral time (Ti)	0.01~10.00s	0.01~10.00	0.10s		178.
P9.06	Differential time (Td)	0.00~10.00s	0.00~10.00	0.00s		179.
P9.07	Sampling cycle (T)	0.01~100.00s	0.00~100.00	0.10s		180.
P9.08	Bias limit	0.0~100.0%	0.0~100.0	0.0%		181.
P9.09	Feedback lost detecting value	0.0~100.0%	0.0~100.0%	0.0%		182.
P9.10	Feedback	0.0~3600.0s	0.0~3600.0	1.0s		183.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
P8.17	Reset interval	0.1~100.0s	0.1~100.0	1.0s		161.
P8.18	Preset count value	P8.19~65535	P8.19~65535	0		162.
P8.19	Specified count value	0~P8.18	0~P8.18	0		163.
P8.20	Preset running time	0~65535h	0~65535	65535h		164.
P8.21	FDT level	0.00~ P0.03	0.00~ P0.03	50.00Hz		165.
P8.22	FDT lag	0.0~100.0%	0.0~100.0	5.0%		166.
P8.23	Frequency arrive detecting range	0.0~100.0%(maximum frequency)	0.0~100.0	0.0%		167.
P8.24	Droop control	0.00~10.00Hz	0.00~10.00	0.00Hz		168.
P8.25	Brake threshold voltage	115.0~140.0%	115.0~140.0	130.0%		169.
P8.26	Cooling fan control	0: Auto stop mode 1: Always working	115.0~140.0	120.0%		170.
P8.27	Over modulate on	0: Enabled 1: Disabled	0~1	0		171.
P8.28	PWM mode	0: PWM mode 1 1: PWM mode 2 2: PWM mode 3	0~1	0		172.
P9 Group: PID Control						
P9.00	PID preset	0: Keypad	0~5	0		173.

1." Factory setting" 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.

2. For a better parameter protection, the inverter provides password protection to the parameters. After setting the password (set P7.00 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 inverter may occur). If the password protection is unlocked, the user can modify the password freely and the inverter will work as the last setting one. When P7.00 is set to 0, the password can be canceled. If P7.00 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	Setting Range	Factory Setting	Modify	No.
P0 Group: Basic Function						
P0.00	Speed Control model	0: V/F control 1: Sensorless vector control 2: Torque control (sensorless vector control)	0~2	0		0.
P0.01	Run command source	0: Keypad (LED extinguished) 1: Terminal (LED flickering) 2: Communication (LED lights on)	0~2	0		1.
P0.02	Keypad and	0:Valid, save	0~3	0		2.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	terminal UP/DOWN setting	UP/DOWN value when power off 1: Valid, do not save UP/DOWN value when power off 2: Invalid 3: Valid during running, clear when stop.				
P0.03	Maximum frequency	10.00~400.00Hz	10.00~400.00	50.00Hz		3.
P0.04	Upper frequency limit	P0.05~P0.03(the Maximum frequency)	P0.05~P0.03	50.00Hz		4.
P0.05	Lower frequency limit	0.00~P0.04(Lower frequency limit)	0.00~P0.04	0.00Hz		5.
P0.06	Keypad reference frequency	0.00~P0.03(the Maximum frequency)	0.00~P0.03	50.00Hz		6.
P0.07	Frequency A command source	0: Keypad 1: AI1 2. AI2 3: HDI 4. Simple PLC 5: Multi-stage speed 6: PID 7: Remote communication	0~7	0		7.
P0.08	Frequency B command	0:AI1 1:AI2	0~2	0		8.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
				model		
P8.05	Deceleration time 3	0.1~3600.0s	0.1~3600.0	Depend on model		149.
P8.06	Jog reference	0.00~P0.03	0.00~P0.03	5.00Hz		150.
P8.07	Jog acceleration time	0.1-3600.0s	0.1~3600.0	Depend on model		151.
P8.08	Jog deceleration time	0.1~3600.0s	0.1~3600.0	Depend on model		152.
P8.09	Skip Frequency 1	0.00~P0.03	0.00~P0.03	0.00Hz		153.
P8.10	Skip Frequency 2	0.00~P0.03	0.00~P0.03	0.00Hz		154.
P8.11	Skip frequency bandwidth	0.00~P0.03	0.00~P0.03	0.00Hz		155.
1P8.12	Traverse amplitude	0.0~100.0%	0.0~100.0	0.0%		156.
P8.13	Jitter frequency	0.0~50.0%	0.0~50.0	0.0%		157.
P8.14	Rise time of traverse	0.1~3600.0s	0.1~3600.0	5.0s		158.
P8.15	Fall time of traverse	0.1~3600.0s	0.1~3600.0	5.0s		159.
P8.16	Auto reset times	0~3	0~3	0		160.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
P7.21	Output current at current fault					140.
P7.22	DC bus voltage at current fault					141.
P7.23	Input terminal status at current fault					142.
P7.24	Output terminal status at current fault					143.
P8 Group: Enhanced Function						
P8.00	Acceleration time 1	0.1~3600.0s	0.1~3600.0	Depend on model		144.
P8.01	Deceleration time 1	0.1~3600.0s	0.1~3600.0	Depend on model		145.
P8.02	Acceleration time 2	0.1~3600.0s	0.1~3600.0	Depend on model		146.
P8.03	Deceleration time 2	0.1~3600.0s	0.1~3600.0	Depend on model		147.
P8.04	Acceleration time 3	0.1~3600.0s	0.1~3600.0	Depend on		148.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	source	2:HDI				
P0.09	Scale of frequency B command	0: Maximum frequency 1: Frequency A command	0~1	0		9.
P0.10	Frequency command selection	0: A 1: B 2: A+B 3: Max A and B	0~3	0		10.
P0.11	Acceleration time 0	0.1~3600.0s	0.1~3600.0	Depend on model		11.
P0.12	Deceleration time 0	0.1~3600.0s	0.1~3600.0	Depend on model		12.
P0.13	Running direction selection	0: Forward 1: Reverse 2: Forbid reverse	0~3	0		13.
P0.14	Carrier frequency	1.0~15.0kHz	1.0~15.0	Depend on model		14.
P0.15	AVR function	0 Invalid 1 Valid all the time 2 Only valid in deceleration	0~2	1		15.
P0.16	Motor parameters autotuning	0: No action 1: Rotation autotuning 2: Static autotuning	0~2	0		16.
P0.17	Restore parameters	0: No action 1: Restore factory	0~2	0		17.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		setting 2: Clear fault records				
P1 Group: Start and Stop Control						
P1.00	Start Mode	0: Start directly 1: DC braking and start 2: Speed tracking and start	0~2	0		18.
P1.01	Starting frequency	0.00~10.00Hz	0.00~10.00	0.00Hz		19.
P1.02	Hold time of starting frequency	0.0~50.0s	0.0~50.0	0.0s		20.
P1.03	DC Braking current before start	0.0~150.0%	0.0~150.0	0.0%		21.
P1.04	DC Braking time before start	0.0~50.0s	0.0~50.0	0.0s		22.
P1.05	Acceleration / Deceleration mode	0: Linear 1: reserved	0~1	0		23.
P1.06	Stop mode	0: Decelerate to stop 1: Coast to stop	0~1	0		24.
P1.07	Starting frequency of DC braking	0.00~P0.03	0.00~P0.03	0.00Hz		25.
P1.08	Waiting time before	0.0~50.0s	0.0~50.0	0.0s		26.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		(OL1) 12: Inverter overload (OL2) 13: Input phase failure (SPI) 14: Output phase failure (SPO) 15: Rectify overheat (OH1) 16: IGBT overheat (OH2) 17: External fault (EF) 18: Communication fault (CE) 19: Current detection fault (ITE) 20: Autotuning fault (TE) 21: EEPROM fault (EEP) 22: PID feedback fault (PIDE) 23: Braking unit fault (BCE) 24 Running time arrival (END) 25 Over torque fault (OL3)				
P7.20	Output frequency at current fault					139.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	power			on model		
P7.15	Inverter rated current	0.0~6000.0A	0.0~6000.0	Depend on model		134.
P7.16	Accumulated running time	0~65535h				135.
P7.17	Third latest fault type	0: Not fault 1: IGBT Ph-U fault(OUT1) 2: IGBT Ph-V fault(OUT2) 3: IGBT Ph-W fault(OUT3) 4: Over-current when acceleration(OC1) 5: Over-current when deceleration(OC2) 6: Over-current when constant speed running (OC3) 7: Over-voltage when acceleration (OV1) 8: Over-voltage when deceleration (OV2) 9: Over-voltage when constant speed running (OV3) 10: DC bus Under-voltage(UV) 11: Motor overload				136.
P7.18	Second latest fault type					137.
P7.19	Latest fault type					138.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	DC braking					
P1.09	DC braking current	0.0~150.0%	0.0~150.0	0.0%		27.
P1.10	DC braking time	0.0~50.0s	0.0~50.0	0.0s		28.
P1.11	Dead time of FWD/REV	0.0~3600.0s	0.0~3600.0	0.0s		29.
P1.12	Action when running frequency is less than lower frequency limit (valid when lower frequency limit is above 0)	0: Running at the lower frequency limit 1: Stop 2: Stand-by	0~2	0		30.
P1.13	Delay time for restart	0.0~3600.0s (valid when P1.12=2)	0.0~3600.0	0		31.
P1.14	Restart after power off	0: Disabled 1: Enabled	0~1	0		32.
P1.15	Waiting time of restart	0.0~3600.0s (valid when P1.14=1)	0.0~3600.0	0.0s		33.
P1.16	Terminal detection selection when power is on	0: Disabled 1: Enabled	0~1	0		34.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
P1.17	Reserved	Reserved				35.
P1.18	Reserved	Reserved				36.
P1.19	Reserved	Reserved				37.
P2 Group: Motor Parameters						
P2.00	Inverter model	0: G model 1: P model	0~1	Depend on model		38.
P2.01	Motor rated power	0.4~900.0kW	0.4~3000.0	Depend on model		39.
P2.02	Motor rated frequency	0.01Hz~P0.03	10.00~P0.03	50.00Hz		40.
P2.03	Motor rated speed	0~36000rpm	0~36000	Depend on model		41.
P2.04	Motor rated voltage	0~800V	0~800	Depend on model		42.
P2.05	Motor rated current	0.8~6000.0A	0.8~6000.0	Depend on model		43.
P2.06	Motor stator resistance	0.001~65.535Ω	0.001~65.535	Depend on model		44.
P2.07	Motor rotor resistance	0.001~65.535Ω	0.001~65.535	Depend on model		45.
P2.08	Motor leakage	0.1~6553.5mH	0.1~6553.5	Depend on		46.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		status BIT4: PID preset BIT5: PID feedback BIT6: AI1 BIT7: AI2 BIT8: HDI frequency BIT9: Step No. of PLC or multi-step BIT10: Torque setting value BIT11~ BIT15: Reserved				
P7.09	Coefficient of rotation speed	0.1~999.9% Actual mechanical speed = 120 * output frequency *P7.09 / Number of poles of motor	0.1~999.9	100.0%		128.
P7.10	Coefficient of line speed	0.1~999.9% Line speed = actual mechanical speed * P7.10	0.1~999.9	1.0%		129.
P7.11	Rectify module temperature	0~100.0°C				130.
P7.12	IGBT module temperature	0~100.0°C				131.
P7.13	Software version					132.
P7.14	Inverter rated	0.4~3000.0kW	0.4~3000.0	Depend		133.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		BIT5: Rotation speed BIT6: Line speed BIT7: Output power BIT8: Output torque BIT9: PID preset BIT10: PID feedback BIT11: Input terminal status BIT12: Output terminal status BIT13: Torque setting value BIT14: Count value BIT15: Step No. of PLC or multi-step				
P7.07	Running status display selection 2	0~0XFFFF BIT0: AI1 BIT1: AI2 BIT2: HDI frequency BIT3: Load percentage of motor BIT4: Load percentage of inverter BIT5~15: Reserved	0~0XFFFF	0		126.
P7.08	Stop status display selection	0~0XFFFFF BIT0: Reference frequency BIT1: DC bus voltage BIT2: Input terminal status BIT3: Output terminal	0~0XFFFF	0x00FF		127.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	inductance			model		
P2.09	Motor mutual inductance;	0.1~6553.5mH	0.1~6553.5	Depend on model		47.
P2.10	Current without load	0.01~655.35A	0.1~6553.5	Depend on model		48.
P3 Group: Vector Control						
P3.00	ASR proportional gain K_p1	0~100	0~100	20		49.
P3.01	ASR integral time K_i1	0.01~10.00s	0.01~10.00	0.50s		50.
P3.02	ASR switching point 1	0.00Hz~P3.05	0.00~P3.05	5.00Hz		51.
P3.03	ASR proportional gain K_p2	0~100	0~100	25		52.
P3.04	ASR integral time K_i2	0.01~10.00s	0.01~10.00	1.00s		53.
P3.05	ASR switching point 2	P3.02~P0.03(the Maximum frequency)	P3.02~P0.03	10.00Hz		54.
P3.06	Slip compensation rate of VC	50.0%~200.0%	50~200	100%		55.
P3.07	Torque upper limit	0.0~200.0%(the rated current of the inverter)	0.0~200.0	G model 150.0%		56.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
				P model:120.0%		
P3.08	Torque setting source	0: Keypad (corresponds to P3.09) 1:AI1 2:AI2 3: HDI 4: Multi-step speed 5: Remote communication (1~5: 100% corresponds to 2 times of the rated current of the inverter)	0~5	0		57.
P3.09	Keypad torque setting	-200.0%~200.0%(the rated current of the inverter)	-200.0~200.0	50.0%		58.
P3.10	Upper frequency setting source	0: Keypad (P0.04) 1: AI1 2: AI2 3: HDI 4: Multi-step 5:Remote communication (1~4: 100% corresponds to the Max. frequency)	0~5	0		59.
P4 Group: V/F Control						
P4.00	V/F curve selection	0:Linear curve 1:Multidots curve 2: Torque stepdown curve (1.3 order)	0~4	0		60.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	selection	1: Jog 2: FWD/REV switching 3: Clear UP/DOWN setting 4.QUICK set mode				
P7.04	STOP/RST function selection	0: Valid when keypad control (P0.03=0) 1: Valid when keypad or terminal control (P0.03=0 or 1) 2: Valid when keypad or communication control (P0.03=0 or 2) 3: Always valid	0~3	0		124.
P7.05	Keypad display selection	0: Preferential to external keypad 1: Both display, only external key valid. 2: Both display, only local key valid. 3: Both display and key valid.	0~3	0		125.
P7.06	Running status display selection 1	0~0XFFFF BIT0: running frequency BIT1: Reference frequency BIT2: DC bus voltage BIT3: Output voltage BIT4: Output current	0 0XFFFF	0X07FF		1.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	corresponding output					
P6.13	AO2 upper limit	0.0~100.0%	0.0~100.0	100.0%		114.
P6.14	AO2 upper limit corresponding output	0.00~10.00V	0.00~10.00	10.00V		115.
P6.15	HDO lower limit	0.00%~100.00%	0.00~100.00	0.00%		116.
P6.16	HDO lower limit corresponding output	0.000~ 50.000kHz	0.000~50.000	0.00kHz		117.
P6.17	HDO upper limit	0.00%~100.00%	0.000~100.00	100.0%		118.
P6.18	HDO upper limit corresponding output	0.0~ 50.0kHz	0.000~50.000	50.00kHz		119.
P7 Group: Human and Machine Interface						
	User password	0~65535	0~65535	0		120.
P7.01	Reserve		Reserved	Reserved		121.
P7.02	Reserve		Reserved	Reserved		122.
P7.03	QUICK/JOG function	0: Display status switching	0~4	0		123.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		3: Torque stepdown curve (1.7 order) 4: Torque stepdown curve (2.0 order)				
P4.01	Torque boost	0.0%: (auto) 0.1%~10.0%	0.0~10.0	0.0%		61.
P4.02	Torque boost cut-off	0.0%~50.0% (motor rated frequency)	0.0~50.0	20.0%		62.
P4.03	V/F frequency 1	0.00Hz~P4.05	0.00~P4.05	0.00Hz		63.
P4.04	V/F voltage 1	0.0%~100.0%(the rated voltage of the motor)	0.0~100.0	00.0%		64.
P4.05	V/F frequency 2	P4.03~P4.07	P4.03~P4.07	00.00Hz		65.
P4.06	V/F voltage 2	0.0%~100.0%(the rated voltage of the motor)	0.0~100.0	00.0%		66.
P4.07	V/F frequency 3	P4.05~ P2.02(the rated frequency of the motor)	P4.05~P2.02	00.00Hz		67.
P4.08	V/F voltage 3	0.0%~100.0%(the rated voltage of the motor)	0.0~100.0	0.0%		68.
P4.09	Slip compensation limit	0.00~200.0%	0.0~200.0	0.0%		69.
P4.10	Auto energy saving selection	0: Disabled 1: Enabled	0~1	0		70.
P4.11	Low-frequency cy threshold of restraining	0~10	0~10	2		71.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	oscillation					
P4.12	High-frequency threshold of restraining oscillation	0~10	0~10	0		72.
P4.13	Boundary of restraining oscillation	0.0~P3.03	0.00~P0.03	30.00 Hz		73.
P5 Group: Input Terminals						
P5.00	HDI selection	0: High speed pulse input 1: ON-OFF input	0~1	0		74.
P5.01	S1 Terminal function	0: Invalid 1: Forward 2: Reverse 3: 3-wire control 4: Jog forward 5: Jog reverse 6: Coast to stop 7: Reset fault 8: Pause running 9: External fault input 10: Up command 11: DOWN command 12: Clear UP/DOWN 13: Switch between A	0~39	1		75.
P5.02	S2 Terminal function		0~39	4		76.
P5.03	S3 Terminal function		0~39	7		77.
P5.04	S4 Terminal function		0~39	0		78.
P5.05	S5 terminal function		0~39	0		79.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		19-20: Reserved				
P6.04	AO1 function selection	0: Running frequency 1: Reference frequency 2: Rotation speed 3: Output current 4: Output voltage 5: Output power 6: Output torque 7: AI1 voltage 8: AI2 voltage/current 9: HDI frequency	0~10	0		105.
P6.05	AO2 function selection		0~10	0		106.
P6.06	HDO function selection		0~10	0		107.
P6.07	AO1 lower limit	0.0%~100.0%	0.0~100.0	0.0%		108.
P6.08	AO1 lower limit corresponding output	0.00V ~10.00V	0.00~10.00	0.00V		109.
P6.09	AO1 upper limit	0.0%~100.0%	0.0~100.0	100.0%		110.
P6.10	AO1 upper limit corresponding output	0.00V ~10.00V	0.00~10.00	10.00V		111.
P6.11	AO2 lower limit	0.0~100.0%	0.0~100.0	0.0%		112.
P6.12	AO2 lower limit	0~10.00V	0.00~10.00	0.00V		113.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
P6 Group: Output Terminals						
P6.00	HDO selection	0: High-speed pulse output 1: ON-OFF output	0~1	0		101.
P6.01	HDO ON-OFF output selection	0: No output 1: Running 2: Run forward 3: Run reverse 4: Fault output 5: FDT reached 6: Frequency reached 7: Zero speed running 8: Preset count value reached 9: Specified count value reached 10: Length reached 11: Simple PLC step completed 12: PLC cycle completed 13: Running time reached 14: Upper frequency limit reached 15: Lower frequency limit reached 16: Ready 17: Auxiliary motor 1 started 18: Auxiliary motor 2 started	0~20	1		102.
P6.02	Relay 1 output selection		0~20	4		103.
P6.03	Relay 2 output selection (4.0kW and above)		0~20	0		104.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
P5.06	S6 terminal function	and B 14: Switch between A and A+B 15: Switch between B and A+B 16: Multi-step speed reference1 17: Multi-step speed reference 2 18: Multi-step speed reference 3 19: Multi-step speed reference 4 20: Multi-step speed pause 21: ACC/DEC time selection1n time 22: ACC/DEC time selection 2 23: Reset simple PLC when stop 24: Pause simple PLC 25: Pause PID 26: Pause traverse operation 27: Reset traverse operation 28: Reset counter 29: Reset length 30: ACC/DEC ramp hold 31: Counter input	0~39	0		80.
P5.07	S7 terminal function		0~39	0		81.
P5.08	HDI terminal function		0~39	0		82.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
		32: UP/DOWN invalid temporarily 33-39: Reserved				
P5.09	ON-OFF filter times	1~10	1~10	5		83.
P5.10	Terminal control mode	0: 2-wire control mode 1 1: 2-wire control mode 2 2: 3-wire control mode 1 3: 3-wire control mode 2	0~3	0		84.
P5.11	UP/DOWN setting change rate	0.01~50.00Hz/s	0.01~50.00	0.50Hz/s		85.
P5.12	AI1 lower limit	0.00V~10.00V	-10.00~10.00	0.00V		86.
P5.13	AI1 lower limit corresponding setting	-100.0%~100.0%	-100.0~100.0	0.0%		87.
P5.14	AI1 upper limit	0.00V~10.00V	-10.00~10.00	10.00V		88.
P5.15	AI1 upper limit corresponding setting	-100.0%~100.0%	-100.0~100.0	100.0%		89.
P5.16	AI1 filter time	0.00s~10.00s	0.00~10.00	0.10s		90.

Function Code	Name	Description	Setting Range	Factory Setting	Modify	No.
	constant					
P5.17	AI2 lower limit	0.00V~10.00V	0.00~10.00	0.00V		91.
P5.18	AI2 lower limit corresponding setting	-100.0%~100.0%	-100.0~100.0	0.0%		92.
P5.19	AI2 upper limit	0.00V~10.00V	0.00~10.00	10.00V		93.
P5.20	AI2 upper limit corresponding setting	-100.0%~100.0%	-100.0~100.0	100.0%		94.
P5.21	AI2 filter time constant	0.00s~10.00s	0.00~10.00	0.10s		95.
P5.22	HDI lower limit	0.0 kHz ~50.0kHz	0.00~50.00	0.00kHz		96.
P5.23	HDI lower limit corresponding setting	-100.0%~100.0%	-100.0~100.0	0.0%		97.
P5.24	HDI upper limit	0.0 KHz~50.0KHz	0.00~50.00	50.00kHz		98.
P5.25	HDI upper limit corresponding setting	-100.0%~100.0%	-100.0~100.0	100.0%		99.
P5.26	HDI filter time constant	0.00s~10.00s	0.00~10.00	0.10s		100.