IMO JAGUAR NXG

Series Inverter Drives

Quick Start Guide

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This guide briefly describes the external wiring, terminals, keypads, quick running, common function parameter settings, common faults and solutions, product dimensions, and energy efficiency data of the NXG series inverter.

Visit www.imopc.com for more information and to download the full version of corresponding product manual.

Warning

This guide only provides the basic installation and commissioning information. Failure to comply with the safety instructions and installation and commissioning instructions in the relevant documentation may result in accidents such as equipment damage, personal injury, or even death.

Only trained and qualified professionals are allowed to carry out related operations.

Danger

Do not perform any operations including wiring, inspection, or component replacement when power supply is applied. Before performing these operations, ensure all the input power supplies have been disconnected, and wait for at least the time designated on the inverter.

Caution

Minimum waiting time: 5 minutes 1PH 220V , 0.2–4kW (0.27-5.5HP); 3PH 220V, 0.2–15kW (0.27-20HP); 3PH 380V, 0.4–22kW(0.5-30HP)

Temperature

Ambient temperature range is -10℃ (14°F) to +50℃ (122°F).
When the inverter is installed in a closed space, such as control cabinet, use a cooling fan or air conditioner for temperature adjustment if necessary.

Humidity

The relative humidity (RH) of the air is less than 95%, and there is no condensation.

Altitude

Lower than 1000m.

When the altitude exceeds 1000m, derate by 1% for every increase of 100m. Max: 3000m

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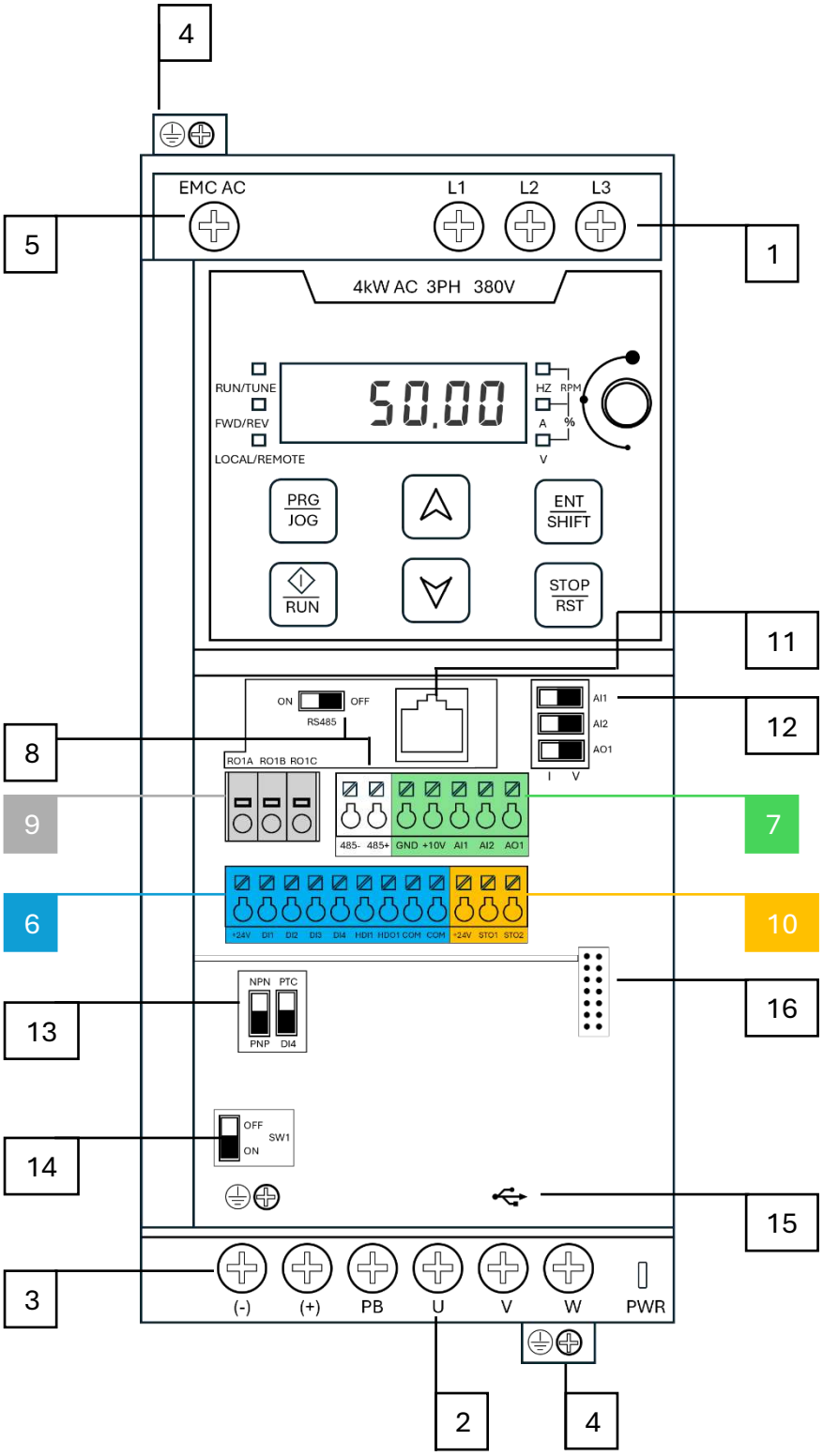
Overview

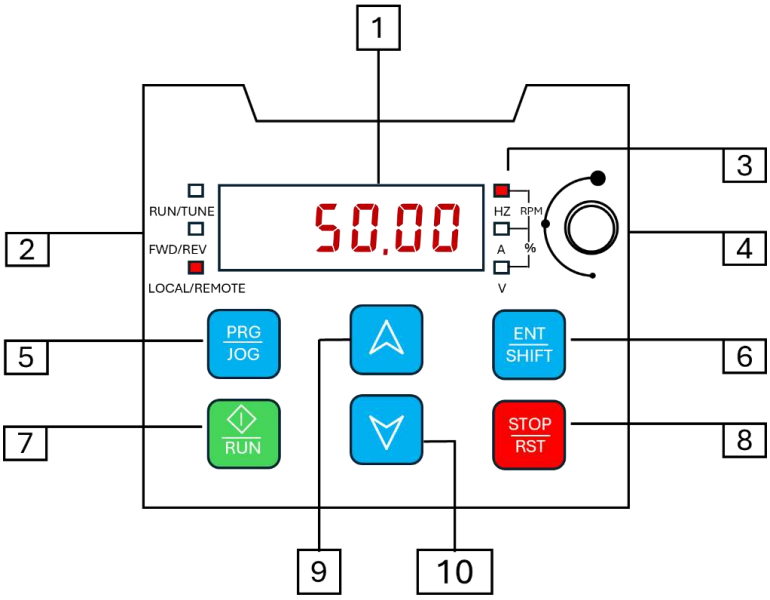


No.	Terminal	Function
1	L1, L2, L3 (L, N)	3PH AC input terminals (L1, L2, L3) to be connected to the AC power input. 1PH AC input terminals (L, N) to be connected to the AC power input.
2	U, V, W	3PH (or 1PH) AC output terminals to be connected to the motor.

No.	Terminal	Function
3	(+)	(+) and (-) are DC bus terminals. PB and (+) to connect to external braking resistors.
	(-)	
	PB	
4	⏚	PE terminal. The PE terminals of each machine must be grounded safely.
5	EMC	EMC AC screw: If this screw is removed, the drive becomes unfiltered.
Digital Input/Output		
6	DI1–DI4 (PTC)	DI1–DI4 functions: Effective input high level range: 10–30V Effective input low level range: 0–5V Max. input frequency: 1kHz Programmable digital input terminals (Parameter group P05). PNP or NPN mode can be selected using the dip switch [13]. PTC function: DI4 can be configured as PTC overtemperature motor protection, which can be enabled through P05.04=57 and toggle switch setting [13]. Overtemperature resistance: 3.6kΩ. Recovery resistance: 1.5kΩ.
	HDI1	High speed input (Set parameter P05.00 to select type of HDI input) Max. input frequency: 50kHz Duty ratio: 30%–70%
	+24V	+24V supply provided by the inverter. Max. output current: 100mA It can be used as an external NPN mode power input for the DI terminal (the switch [13] must be turned to the NPN position).
	COM	+24V digital reference ground, which can be used as an external PNP mode input (the toggle switch [13] must be set to the PNP position).
	HDO1	Transistor output: Switch capacity: 50mA/30V. Output frequency range: 0–50kHz It can be used as a standard DO terminal with push-pull output. Its function is defined by parameter P06.00.
Analog Input/Output		
7	AI1	Input range: 0–10V/0–20mA Input resistance: 33kΩ for voltage input or 250Ω for current input The input type (current or voltage) is selected through the dip switch AI1 [12], and the function code P05.76 also needs to be set accordingly. Resolution: 1% accuracy across the full range
	AI2	Input range: -10–10V/0–20mA Input resistance: 33kΩ for voltage input or 250Ω for current input The input type (current or voltage) is selected through the dip switch AI2 [12], and the function code P05.76 also needs to be set accordingly. Resolution: 1% accuracy across the full range
	+10V	+10V supply provided by the inverter. Max. output current: 50mA
	GND	+10V power supply reference ground and analogue signal reference ground.
	AO1	Output range: 0–10V/0–20mA The output type (current or voltage) is selected through the toggle switch AO1 [12]. Resolution: 1% accuracy across the full range

No.	Terminal	Function
Communication		
8	RS485+	RS485 differential signal communication port. Use shielded twisted pairs for standard RS485 communication interfaces. The RS485 toggle switch enables or disables the 120 Ω terminal resistor.
	RS485-	
Relay Output		
9	RO1A	RO1A: Normally Open (NO) RO1B: Normally Close (NC) RO1C: common; Contact capacity: 3A/AC 250V, 1A/DC 30V
	RO1B	
	RO1C	
STO		
10	STO1	Safe Torque Off (STO) inputs (SIL3 level protection). STO redundant inputs, should be connected to the external NC contact. When the contact opens, STO acts, and the inverter stops the output and freewheels the motor to stop. Use shielded wires with length is within 25m. The STO1 and STO2 terminals are short connected to +24V by default. Remove the jumper from the terminals before using the STO function.
	STO2	
	+24V	
External Keypad		
11	RJ45 Port	External keypad port When the Type C USB is connected, the external keypad cannot be used
Dip Switches		
12	AI1	Current (left)  Voltage (right) Default setting is Voltage. Parameter P05.76 also needs to be set accordingly.
	AI2	
	AO1	
13	NPN/PNP	NPN  PNP Default setting is PNP
	DI4/PTC	PTC  DI4 Default setting is DI4
14	SW1	OFF GND terminal is isolated from PE  ON GND terminal is connected to PE
USB Type C (USB 2.0)		
15	USB Type C	USB type-C interface can be connected to a PC, using Modbus RTU as the communication protocol. When the inverter is not connected to the main power supply, it can be used to modify, save, import, and export parameters; when the inverter is connected to the main power supply, it can be used to control the inverter operation and monitor the running parameters. Type-C serves as a monitoring and debugging interface and it cannot be used when an external keypad is connected.
Communication Card : Part Number- NXG-E-ETH		
16	Communication card slot [PROFINET, EtherNet IP, EtherCAT, Modbus TCP, and EtherNet UDP for communication between IMO workshop studio software and the inverter]	

Keypad

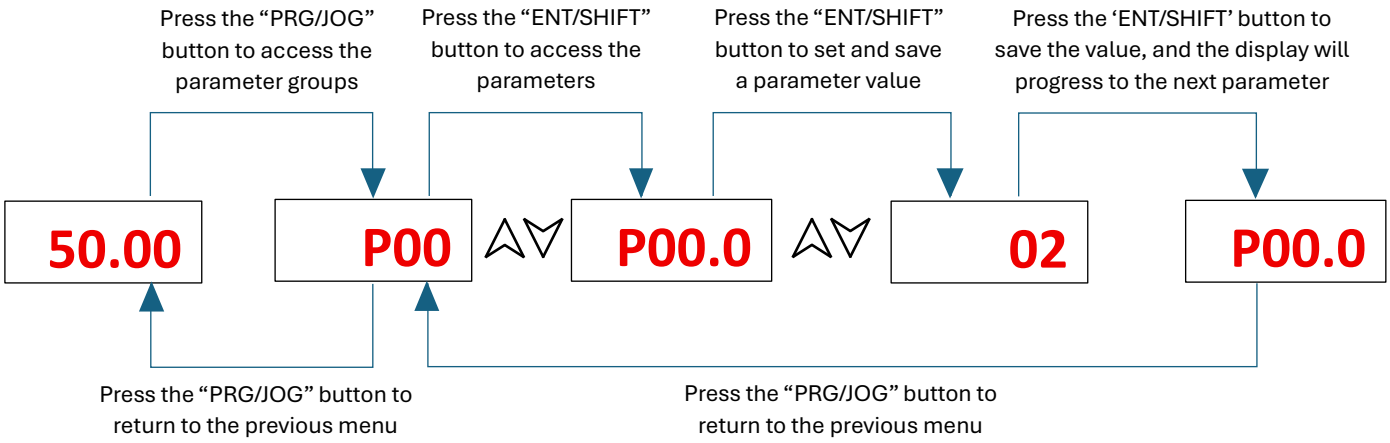


No.	Function		
1	Digital display zone		
2	RUN/TUNE	On	The inverter is running.
		Blinking	The inverter is in motor parameter autotuning.
		Off	The inverter is stopped.
	FWD/REV	On	The inverter is running reverse.
		Off	The inverter is running forward.
	LOCAL/REMOTE	On	Run command source - Communication
		Blinking	Run command source - Terminal
		Off	Run command source - Keypad
	RUN/TUNE FWD/REV LOCAL/REMOTE	On On On	The inverter is in fault state.
		Off Off Off	The inverter is in pre-alarm state.
3	Hz	On	Hz – Frequency in Hertz
	Hz A	On On	RPM – Speed in RPM
	A	On	A – Current in Amps
	A V	On On	% – Percentage
	V	On	V – Voltage in volts
4	Potentiometer (AI3)		
5	PRG/JOG key	Press it to enter or exit level 1 menus. Press and hold it (at least 1s) to enable the function defined by the ones place of P07.02, which is jogging by default.	

No.	Function	
6	ENT/SHIFT key	Press it to enter menus in cascading mode or confirm the setting of a parameter. Press it to select display parameters in the interface for the inverter in stopped or running state. Press and hold it (at least 1s) or to select digits to change during parameter setting.
7	RUN key	Press it to run or perform autotuning under keypad operation mode.
8	STOP/RST key	P07.04 specifies the validity of the key function. Press it to stop running or autotuning in running state. Press it to reset in fault alarm state.
9	UP key	Press it to increase data or move upward.
10	DOWN key	Press it to decrease data or move downward.

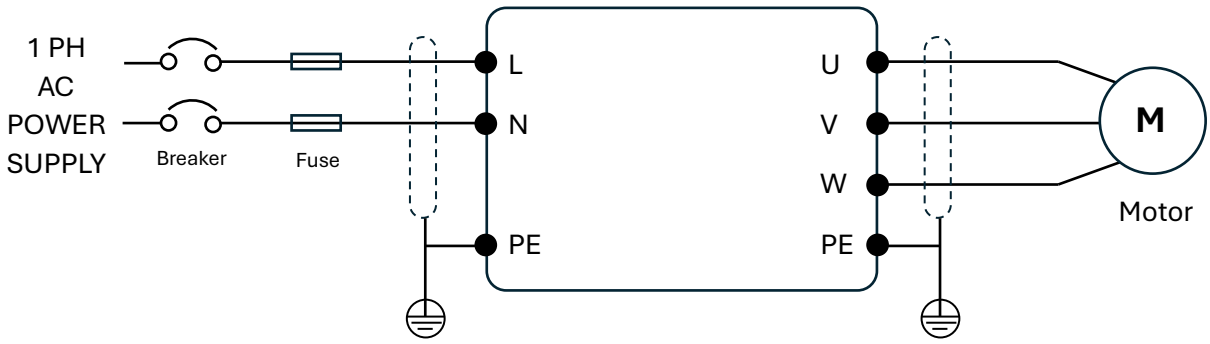
How to set a parameter

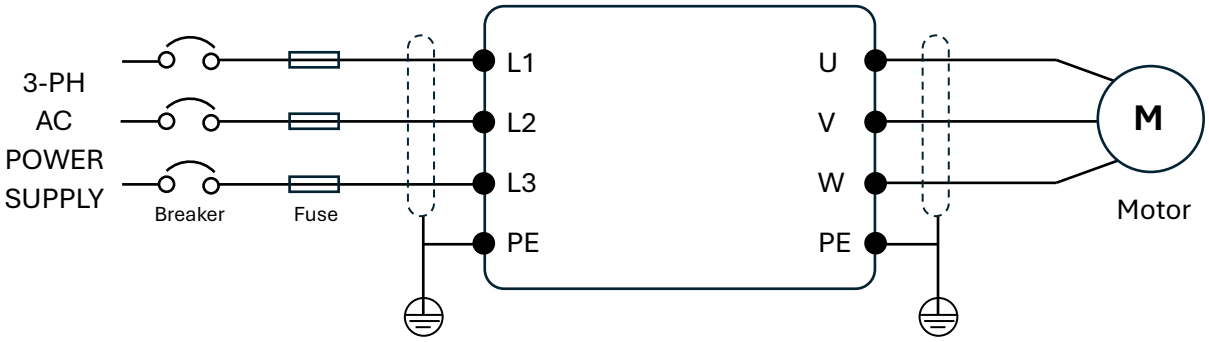
On first power-up, the drive display will flash "**50.00**" (default frequency in Hz). Follow the instructions below to set parameters. If the display shows alphabetic letters, refer to the fault codes section.



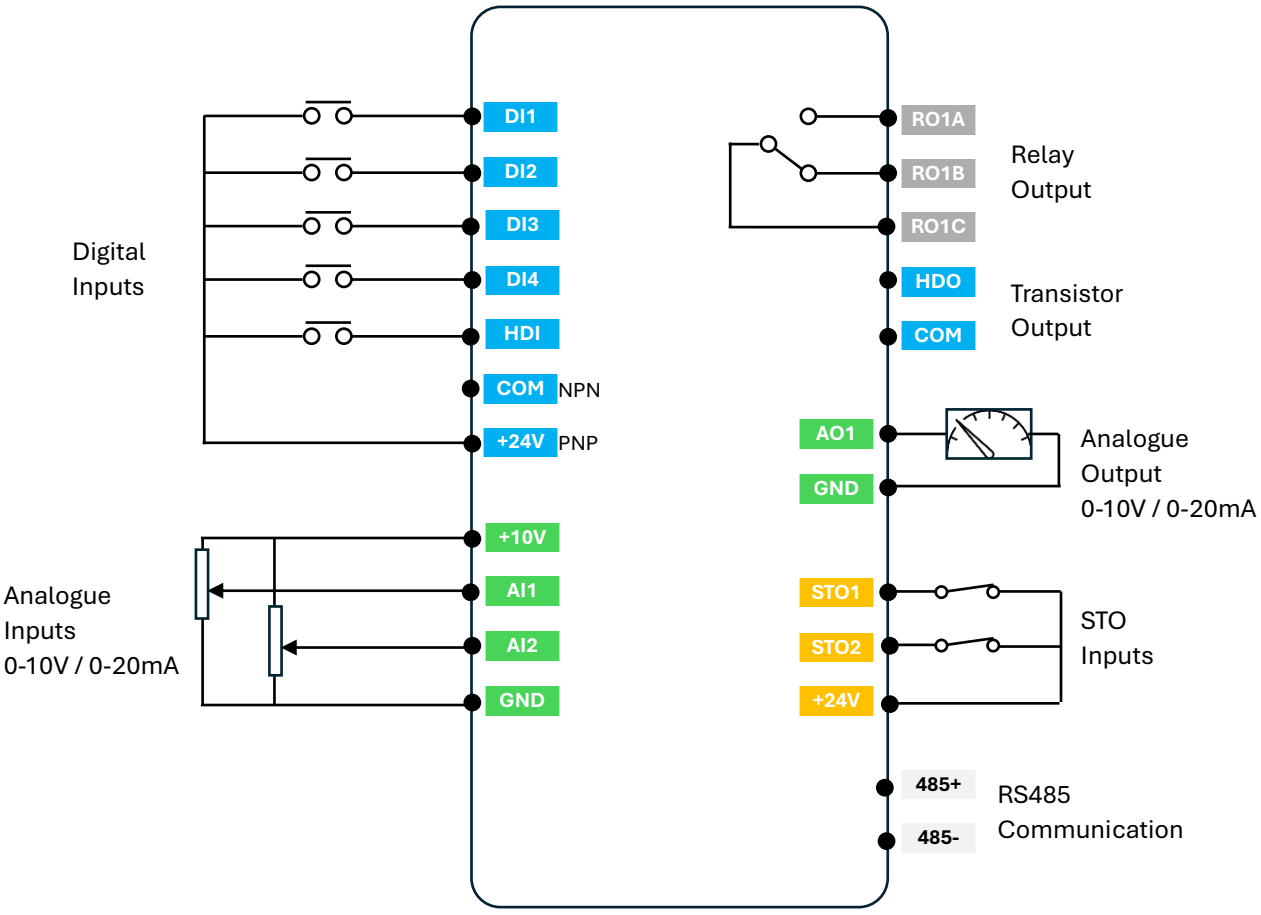
Basic Control Terminal Wiring

1. Main circuit wiring

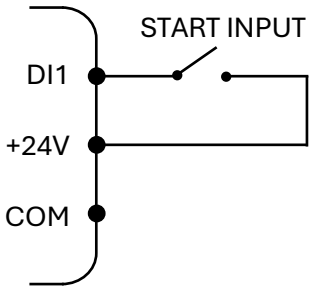


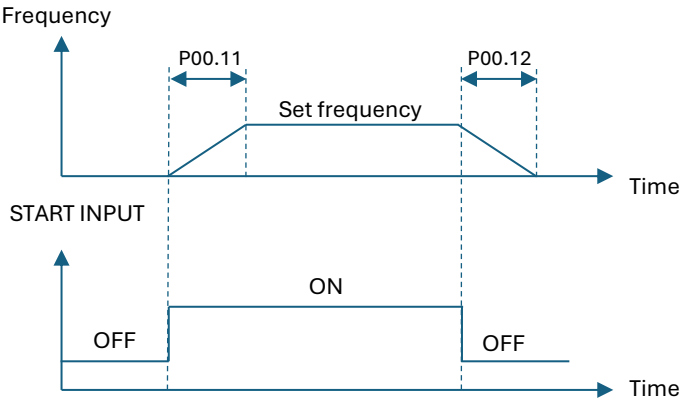


2. Control terminals wiring



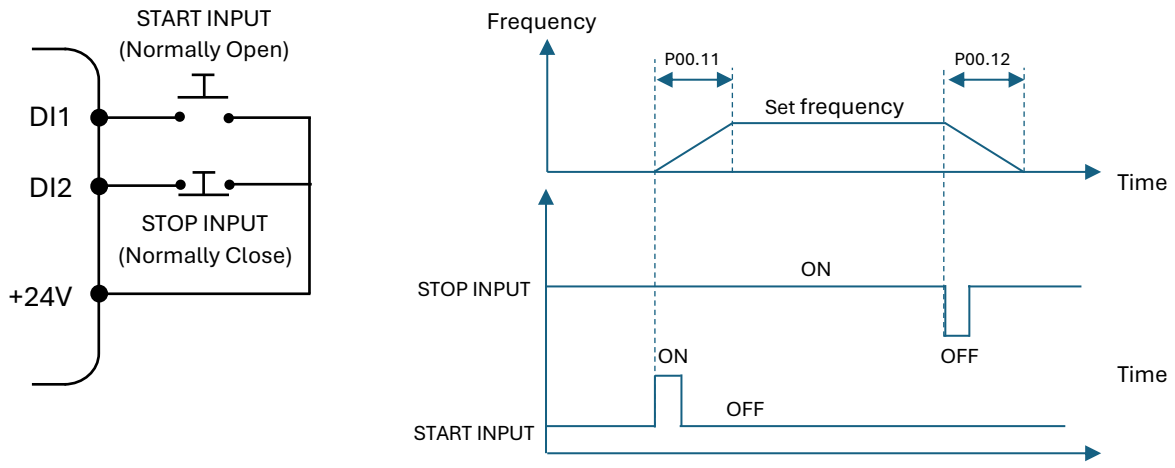
Example 1: How to wire a START input





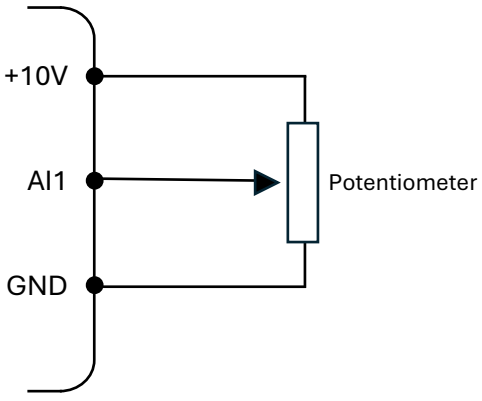
Parameter	Value	Description
P00.01	1	RUN command channel : Terminal
P05.01	1	DI1 function: FORWARD RUN

Example 2: How to wire a START & STOP input (Push button)



Parameter	Value	Description
P00.01	1	RUN command channel : Terminal
P05.01	1	DI1 function: FORWARD RUN
P05.02	3	DI2 function: 3-wire control
P05.17	2	3-wire control mode

Example 3: How to wire an external potentiometer



Parameter	Value	Description
P00.06	1	Frequency command: AI1

Parameters

The following briefly describes only common function parameters and typical values.

"○" indicates that the value of the parameter can be modified when the inverter is in stop or in running state.

"◎" indicates that the value of the parameter cannot be modified when the inverter is in running state.

"●" indicates that the value of the parameter is recorded and cannot be modified.

Note: Before running your application, it is a mandatory requirement to programme ALL highlighted function codes.

Function code	Name	Description	Default	Modify
P00.00	Speed control mode	0: SVC mode 0 (Vector Control mode 0) 1: SVC mode 1 (Vector Control mode 1) 2: V/F Mode	2	◎
P00.01	Channel of running commands	0: Keypad 1: Terminal 2: Communication	0	○
P00.02	Communication mode of running commands	0: Modbus/Modbus TCP 2: Ethernet 3: EtherCAT/PROFINET/EtherNet IP	0	○
P00.03	Maximum output frequency	Max(P00.04)–599.00Hz	50.00Hz	◎
P00.04	Upper limit of running frequency	P00.05–P00.03	50.00Hz	◎
P00.05	Lower limit of running frequency	0.00Hz–P00.04	0.00Hz	◎
P00.06	Frequency Command Channel A	0: P00.10 1: AI1 2: AI2 3: AI3 5: High-speed pulse HDI1 7: Simple PLC program 8: Multi-step speed running 9: PID control 10: Modbus communication 12: Ethernet communication 14: EtherCAT/PROFINET/ EtherNet IP communication	0	○
P00.07	Frequency Command Channel B		1	○
P00.10	Set frequency via keypad	0.00Hz–P00.03	50.00Hz	○
P00.11	Acceleration time 1	0.0–3600.0s	Model dependent	○
P00.12	Deceleration time 1		Model dependent	○

Function code	Name	Description	Default	Modify
P00.18	Function parameter Reset	0: No operation 1: Reset to default values (excluding motor parameters) 2: Clear fault records 6: Reset to default values (including motor parameters)	0	◎
Motor Parameters				
P02.00	Type of motor 1	0: Asynchronous motor (AM) 1: Synchronous motor (SM)	0	◎
P02.01	Rated power of AM 1	0.1–3000.0kW	Model dependent	◎
P02.02	Rated frequency of AM 1	0.01Hz–P00.03	50.00Hz	◎
P02.03	Rated speed of AM 1	1–60000rpm	Model dependent	◎
P02.04	Rated voltage of AM 1	0–1200V	Model dependent	◎
P02.05	Rated current of AM 1	0.08–600.00A	Model dependent	◎
P02.15	Rated power of SM 1	0.1–3000.0kW	Model dependent	◎
P02.16	Rated frequency of SM 1	0.01–P00.03Hz	50.00Hz	◎
P02.17	Number of pole pairs of SM 1	1–128	2	◎
P02.18	Rated voltage of SM 1	0–1200V	Model dependent	◎
P02.19	Rated current of SM 1	0.08–600.00A	Model dependent	◎
P02.23	Counter-emf of SM 1	0–10000	300	○
Terminal Input Parameters				
P05.00	HDI input type	0: HDI1 is high-speed pulse input 1: HDI1 is digital input	0	◎
P05.01	DI1function	0: No function 1: Run forward 2: Run reverse 3: Three-wire running control 4: Jog forward 5: Jog reverse 6: Coast to stop 7: Reset faults 8: Pause running 9: External fault input	1	◎
P05.02	DI2 function		4	◎
P05.03	DI3 function		7	◎
P05.04	DI4 function		0	◎
P05.11	HDI1 function		0	◎

Function code	Name	Description	Default	Modify
		10: Increase frequency setting (UP) 11: Decrease frequency setting (DOWN) 57: Motor overtemperature fault input (supported only by DI4)		
P05.42	AI1 lower limit	0.00V–P05.44	0.00V	○
P05.43	Corresponding setting of AI lower limit	-300.0%–300.0%	0.0%	○
P05.44	AI1 upper limit	P05.42–10.00V	10.00V	○
P05.45	Corresponding setting of AI1 upper limit	-300.0%–300.0%	100.0%	○
P05.47	AI2 lower limit	-10.00V–P05.49	-10.00V	○
P05.48	Corresponding setting of AI2 lower limit	-300.0%–300.0%	-100.0%	○
P05.49	AI2 middle value 1	P05.47–P05.51(V)	0.00V	○
P05.50	Corresponding setting of AI2 middle value 1	-300.0%–300.0%	0.0%	○
P05.51	AI2 middle value 2	P05.49–P05.53(V)	0.00V	○
P05.52–	Corresponding setting of AI2 middle value 2	-300.0%–300.0%	0.0%	○
P05.56	AI3 lower limit	0.00V–P05.58	0.00V	○
P05.76	AI input signal type selection	Bit0: AI1 input signal type selection 0: Voltage 1: Current Bit1: AI2 input signal type selection 0: Voltage 1: Current	0x0–0xF	◎
Terminal Output Parameters				
P06.00	HDO1 output type	0: High-speed pulse output 1: Digital output	0	◎
P06.04	HDO1 output	0: Invalid 1: Running 2: Running forward 3: Running reverse 4: Jogging 5: Inverter in fault 6: Frequency level detection FDT1 7: Frequency level detection FDT2 8: Frequency reached	0	○
P06.05	RO1 output		1	○
P06.09	Output terminal polarity selection	0x00–0x1F Bit0–bit2: Reserved Bit3: HDO1	0x00	○

Function code	Name	Description	Default	Modify
		Bit4: RO1		
P06.26	AO1 output	0: Running frequency 1: Set frequency 2: Ramp reference frequency 3: Rotational speed 4: Output current (100% corresponds to twice the inverter rated current) 5: Output current (100% corresponds to twice the motor rated current) 6: Output voltage 7: Output power	0	○
P06.28	HDO1 high-speed pulse output		0	○
P06.29	AO1 output lower limit	-300.0%–P06.31	0.0%	○
P06.30	AO1 output corresponding to lower limit	0.00–10.00V	0.00V	○
P06.31	AO1 output upper limit	P06.29–300.0%	100.0%	○
P06.32	AO1 output corresponding to upper limit	0.00–10.00V	10.00V	○
P06.21	AO1 output filter time	0.000s–10.000s	0.000s	○
Fault Records				
P07.00	User password	0–65535	0	○
P07.01	Parameter copy	0: No operation 1: Upload parameters to the keypad 2: Download all parameters 3: Download non-motor parameters 4: Download motor parameters Note: The parameter copying function is available only with the external keypad	0	◎
P07.27	Present fault type	-	0	●
P07.28	Last fault type	-	0	●
P07.29	2nd-last fault type	-	0	●
P07.30	3rd-last fault type	-	0	●
P07.31	4th-last fault type	-	0	●
P07.32	5th-last fault type	-	0	●

Appendix A Fault codes and solutions

Fault code	Fault type	Possible cause	Solution
E4	Overcurrent during acceleration	1. Acceleration time is too short. 2. Load too large or sudden change of load. 3. Started while motor was rotating. 4. 3PH output current imbalance. 5. When vector control is used for motor control, parameter autotuning is not performed. 6. When V/F control is used for motor control, V/F curve setting is abnormal. 7. There are strong external interference sources (contactor switchover or improper grounding). 8. Grid voltage is too low. 9. Hardware fault.	1. Increase the acceleration time or reduce the software current limit point in P11.06; If the application requires quick acceleration, then increase the inverter capacity. 2. Increase the inverter capacity to ensure that the motor does not experience stalling, and that the application functions without any faults. 3. Start the inverter after the motor stops rotating or select speed tracking start in P01.00. 4. Check the inverter output voltage and motor resistance to ensure three-phase balance. 5. Set the rated parameters according to the motor nameplate and perform parameter autotuning through P00.15. 6. Adjust the frequency and voltage relationship set by the V/F curve and reduce the voltage corresponding to the frequency. 7. To avoid strong interference, keep the motor cables away from contactors and ensure reliable grounding of the system. 8. Improve the power quality or increase the inverter capacity. 9. Replace the inverter.
E5	Overcurrent during deceleration	1. Deceleration time is too short. 2. Software current limit point setting is too high. 3. Load too large or sudden change of load. 4. 3PH output current imbalance. 5. When vector control is used for motor control, parameter autotuning is not performed. 6. When V/F control is used for motor control, V/F curve setting is abnormal. 7. There are strong external interference sources (contactor switchover or improper grounding). 8. Hardware fault.	1. Increase the deceleration time; If the application requires quick deceleration, increase the inverter capacity. 2. Reduce the software current limit point in P11.06. 3. Increase the inverter capacity to ensure that the motor does not experience stalling, and that the application functions without any exception. 4. Check the inverter output voltage and motor resistance to ensure three-phase balance. 5. Set the rated parameters according to the motor nameplate and perform parameter autotuning through P00.15. 6. Adjust the frequency and voltage relationship set by the V/F curve and reduce the voltage corresponding to the frequency. 7. To avoid strong interference, keep the motor cables away from contactors and ensure reliable grounding of the system. 8. Replace the inverter.

Fault code	Fault type	Possible cause	Solution
E6	Overcurrent during constant speed running	1. Load too large or sudden change of load. 2. Software current limit point setting too high. 3. 3PH output current imbalance. 4. When vector control is used for motor control, parameter autotuning is not performed. 5. When V/F control is used for motor control, V/F curve setting is abnormal. 6. There are strong external interference sources (contactor switchover or improper grounding). 7. Grid voltage is too low. 8. Hardware fault.	1. Increase the inverter capacity to ensure that the motor does not experience stalling, and that the load equipment functions without any exception. 2. Reduce the software current limit point through P11.06. 3. Check the inverter output voltage and motor resistance to ensure three-phase balance. 4. Set the rated parameters according to the motor nameplate and perform parameter autotuning through P00.15. 5. Adjust the frequency and voltage relationship set by the V/F curve and reduce the voltage corresponding to the frequency. 6. To avoid strong interference, keep the motor cables away from contactors and ensure reliable grounding of the system. 7. Improve the power quality or increase the inverter capacity. 8. Replace the inverter.
E7	Overvoltage during acceleration	1. Acceleration time is too short. 2. Grid voltage is too high. 3. Start during motor rotating. 4. The load has significant energy feedback. 5. Improper setting of overvoltage stall protection.	1. Increase the acceleration time or enable overvoltage stall protection. 2. Improve the power quality to comply with the inverter input voltage specifications (refer to product specifications). 3. Start after the motor stops or select speed tracking start through P01.00. 4. Install a braking unit or energy feedback unit or remove external factors that cause the load to generate power. 5. Enable overvoltage stall protection through P11.03 and lower the overvoltage stall protection voltage value of P11.04.
E8	Overvoltage during deceleration	1. Deceleration time is too short. 2. Grid voltage is too high. 3. The load has significant energy feedback. 4. Improper setting of overvoltage stall protection.	1. Increase the deceleration time; if the application requires quick deceleration, braking units, energy feedback units can be added, or the magnetic flux braking function can be used. 2. Improve the power quality to comply with the inverter input voltage specifications (refer to product specifications). 3. Install a braking unit or energy feedback unit or remove external factors that cause the load to generate power. 4. Enable overvoltage stall protection through P11.03 and lower the overvoltage stall protection voltage value of P11.04.

Fault code	Fault type	Possible cause	Solution
E9	Overvoltage during constant speed running	1. Grid voltage is too high. 2. The load has significant energy feedback. 3. Improper setting of overvoltage stall protection.	1. Improve the power quality to comply with the inverter input voltage specifications (refer to product specifications). 2. Install a braking unit or energy feedback unit or remove external factors that cause the load to generate power. 3. Enable overvoltage stall protection through P11.03 and lower the overvoltage stall protection voltage value of P11.04.
E10	DC bus undervoltage	1. Grid voltage is too low. 2. Abnormal bus voltage display. 3. Abnormal precharge contactor closing. 4. Running under heavy load in the event of input phase loss.	1. Increase grid input voltage. 2. Contact IMO. 3. Contact IMO. 4. Check for abnormal input power and loose input cables.
E11	Motor overload	1. Grid voltage is too low. 2. Motor rated current is set incorrectly. 3. Motor stall or load jumps violently.	1. Increase grid input voltage. 2. Reset the motor rated current in the motor parameter group. 3. Check the load and adjust torque boost.
E12	Inverter overload	1. Acceleration is too fast. 2. The motor is restarted during rotating. 3. Grid voltage is too low. 4. Load is too heavy. 5. Inverter power is too small.	1. Increase acceleration time. 2. Avoid restarting after stop. 3. Increase grid input voltage. 4. Select an inverter with larger power.
E13	Input side phase loss	1. Phase loss or significant fluctuations in input L1, L2, or L3. 2. Input-side screws are loose.	1. Check for abnormal input power and loose input cables. Set P11.00 to disable the fault if applicable. 2. Tighten the screws.
E14	Output side phase loss	1. Output cables are broken or short connected to the ground. 2. UVW phase loss (or the three phases of load are seriously asymmetrical). Note: The output phase loss detection time requires at least 2.5s. After phase loss, instability may occur, potentially leading to overcurrent, overvoltage, overload, or speed deviation fault being reported first.	1. Check for loose or broken output cables. 2. Check for sharp load fluctuation and motor 3PH resistance imbalance.
E16	Inverter module overheat	1. Air duct is blocked, or fan is damaged. 2. Ambient temperature is too high.	1. Ventilate the air duct or replace the fan. 2. Keep good ventilation to lower ambient temperature. 3. Select an inverter with larger power.

Fault code	Fault type	Possible cause	Solution
		3. Motor running over the inverter's overload limit for too long.	
E17	External fault	DI terminal external fault input signal is activated.	Check whether external device input is normal.
E18	Modbus/Modbus TCP communication fault	1. Incorrect baud rate 2. Communication wiring fault. 3. Incorrect communication address. 4. Communication suffers from strong interference.	1. Set a proper baud rate. 2. Check the communication port wiring. 3. Set the communication address correctly. 4. It is recommended to use shielded cables to improve anti-interference.
E19	Current detection fault	1. Motor cable or motor insulation fault.	1. Check the cables and replace them if necessary. 2. Contact IMO.
E20	Motor autotuning fault	1. Motor capacity does not match with inverter capacity. This fault may occur if the capacity difference exceeds five power ratings. 2. Incorrect motor parameter setting. 3. The parameters gained from autotuning deviate sharply from the standard parameters. 4. Autotuning timeout. 5. Pulse current setting is too large.	1. Change the inverter model, or adopt V/F mode for control 2. Check motor wiring, motor type, and parameter settings. 3. Empty the motor load and re-perform autotuning. 4. Check whether the upper limit frequency is larger than 2/3 of the rated frequency. 5. Decrease the pulse current setting properly.
E21	EEPROM operation fault	1. Error in reading or writing control parameters 2. EEPROM damaged.	1. Press STOP/RST to reset. 2. Contact IMO.
E22	PID feedback offline.	PID feedback wiring fault.	Check PID feedback signal wires.
E23	Braking unit fault	1. Braking circuit fault or braking resistor damage. 2. External braking resistor with small resistance.	1. Check the braking unit and replace the braking resistor if necessary. 2. Increase the braking resistance.
E24	Running time reached	Actual inverter running time longer than internally set running time.	Contact IMO.
E25	Electronic overload	The inverter reports overload pre-alarm according to the setting.	Check whether the overload pre-alarm point is set properly.
E27	Parameter upload error	1. Keypad cable connected improperly or disconnected. 2. Keypad cable is too long, causing strong interference. 3. Keypad or mainboard communication circuit error	1. Check the keypad cable and re-plug to determine whether a fault occurs. 2. Reduce the cable length (Maximum length is 100m). 3. Replace the hardware and contact IMO if necessary.
E28	Parameter download error	1. Keypad cable connected improperly or disconnected. 2. Keypad cable is too long, causing strong interference.	1. Check the keypad cable and re-plug to determine whether a fault occurs. 2. Check whether the version of the control board software of keypad backup parameter copy is the same as

Fault code	Fault type	Possible cause	Solution
		3. Keypad data storage error	the version of the control board software of the inverter.
E30	Ethernet communication fault	No data transmission between the communication card and the host controller (or PLC).	Check whether the communication card wiring is loose or disconnected.
E32	To-ground short-circuit fault	1. The output of the inverter is short circuited to the ground. 2. Current detection circuit fault.	1. Check whether the motor is short circuited to the ground and wiring is normal. 2. Check whether the motor wiring is normal. 3. Contact IMO if necessary.
E34	Speed deviation fault	Load too heavy or stalled.	1. Check for overload, increase speed deviation detection time, or increase acceleration / deceleration time. 2. Check motor parameter settings and re-perform motor parameter autotuning. 3. Check speed loop control parameter settings.
E35	Mal-adjustment fault	1. Load exception. 2. Incorrect SM parameter settings. 3. Autotuned motor parameters are inaccurate. 4. The inverter is not connected to the motor. 5. Flux weakening application.	1. Check for overload or stalling. 2. Check motor parameter and counter EMF settings. 3. Re-perform motor parameter autotuning. 4. Increase the mal-adjustment detection time. 5. Adjust flux weakening coefficient and current loop parameters.
E36	Underload fault	The inverter reports underload pre-alarm according to the setting.	Check the load and overload pre-alarm threshold.
E40	Safe Torque Off	Safe torque off function is enabled by external terminal connected to STO1 and STO2.	If this fault is triggered without activating STO1 or STO2 terminals, then please contact IMO.
E41	Safety circuit exception of STO channel 1 (STO1)	1. Fault occurred to external switch of STO1 or STO2. 2. Channel safety circuit hardware fault.	1. Check whether terminal wiring of STO1 or STO2 is proper and firm enough. 2. Contact IMO. Note: Re-power on is required to clear the fault.
E42	Safety circuit exception of STO channel 2 (STO2)		
E43	Exception to both STO channel 1 and channel 2	Hardware fault occurred at STO circuit.	Contact IMO.
E44	STO safety code FLASH CRC check fault	Drive board fault.	Contact IMO.
E57	PROFINET communication timeout	No data transmission between the communication card and the host controller (or PLC).	Check whether the communication cable is loose or disconnected.
E59	Motor overtemperature fault	1. Inverter temperature or ambient temperature is too high. 2. AI/AO detected temperature inaccurate.	1. Install suitable ventilation to reduce the excess heat. 2. Replace the temperature measuring resistor. 3. Check the external temperature measuring terminal signal.

Fault code	Fault type	Possible cause	Solution
		3. DI4 input motor overtemperature signal is activated.	
E60	Communication card identifying failure	There is data transmission in communication card interface, but the card type cannot be identified.	Check whether the expansion card in the slot is supported.
E63	Communication card communication timeout fault	No data transmission in the communication card interface.	1. Stabilize the expansion card interface after power-off, and check whether the fault persists at next power-on. 2. Check whether the insertion port or card slot is damaged. If yes, replace the insertion port or card slot after power-off.
E66	EtherCAT communication timeout	No data transmission between the communication card and the host controller (or PLC).	Check whether the communication cable is loose or disconnected.
E92	AI1 disconnection	1. AI1 input too low. 2. AI1 wiring disconnected.	1. Connect a 5V or 10mA power source to check whether the input is normal. 2. Check the wiring or replace the cable.
E93	AI2 disconnection	1. AI2 input is too low. 2. AI2 wiring disconnected.	
E94	AI3 disconnection	1. AI3 input is too low. 2. AI3 wiring disconnected.	
E95	EtherNet IP communication timeout fault	No data transmission between the communication card and the host controller (or PLC).	Check whether the communication cable is loose or disconnected.
E96	No upgrade bootloader	Upgrade bootloader missing.	Contact IMO.
E587	Dual CPU communication fault 1	Dual CPU communication fault.	Contact IMO.
E588	Dual CPU communication fault 2		
PoFF	System power failure	The system is powered off or the bus voltage is too low.	Check the input power supply.

Appendix B Inverter ratings

Inverter model	Constant Torque (HD)				Variable Torque (ND)			
	Output power		Input current (A)	Output current (A)	Output power		Input current (A)	Output current (A)
	kW	HP			kW	HP		
AC 1PH 200V–240V								
NXG-1.5A-21	0.2	0.27	3.9	1.5	0.4	0.5	4.5	2
NXG-2.5A-21	0.4	0.5	5.3	2.5	0.75	1	7.4	3.3
NXG-4.2A-21	0.75	1	8.8	4.2	1.1	1.5	11	5.1
NXG-6.5A-21	1.1	1.5	14.8	6.5	1.5	2	17.0	7.5
NXG-7.5A-21	1.5	2	17.0	7.5	2.2	3	20.4	9.8
NXG-10A-21	2.2	3	20.6	10	3	4	23.8	12.5
NXG-16A-21	4	5.5	34	16	-	-	-	-
AC 3PH 200V–240V								
NXG-1.5A-23	0.2	0.27	2.2	1.5	0.4	0.5	3.3	2
NXG-2.5A-23	0.4	0.5	4.1	2.5	0.75	1	5.6	3.3
NXG-4.2A-23	0.75	1	6.8	4.2	1.1	1.5	8.1	5.1
NXG-6.5A-23	1.1	1.5	9.1	6.5	1.5	2	11.5	7.5
NXG-7.5A-23	1.5	2	11.5	7.5	2.2	3	15	9.8
NXG-10A-23	2.2	3	15.1	10	3	4	17.7	12.5
NXG-16A-23	4	5.5	20	16	5.5	7.5	26	21
NXG-20A-23	5.5	7.5	25.7	20	7.5	10	30	26
NXG-30A-23	7.5	10	33	30	11	15	43	39
NXG-42A-23	11	15	44	42	-	-	-	-
NXG-55A-23	15	20	60	55	18.5	25	72	64
AC 3PH 380V–480V								
NXG-1.5A-43	0.4	0.5	2.7	1.5	0.75	1	3.9	2
NXG-2.5A-43	0.75	1	4.5	2.5	1.1	1.5	6	3.3
NXG-3A-43	1.1	1.5	5.8	3	1.5	2	6.9	3.7
NXG-4.2A-43	1.5	2	7.6	4.2	2.2	3	9.6	5.5
NXG-5.5A-43	2.2	3	9.6	5.5	3	4	10.4	7
NXG-7.5A-43	3	4	11.4	7.5	4	5.5	15.3	9.5
NXG-9.5A-43	4	5.5	15.3	9.5	5.5	7.5	17.2	11.5
NXG-14A-43	5.5	7.5	22.1	14	7.5	10	27.6	18
NXG-18.5A-43	7.5	10	28	18.5	11	15	29.8	21
NXG-25A-43	11	15	36	25	15	20	46	32
NXG-32A-43	15	20	46	32	18.5	25	55	38
NXG-38A-43	18.5	25	55	38	22	30	60	45
NXG-45A-43	22	30	60	45	30	40	72	58

Appendix C Dimensions

Inverter model	Frame size	Width (mm)	Height (mm)	Depth (mm)	Net Weight(kg)	Gross Weight (kg)	Mounting hole diameter (mm)
AC 1PH 200V–240V							
NXG-1.5A-21	A	60	190	155	1.23	1.34	Ø5
NXG-2.5A-21	A						Ø5
NXG-4.2A-21	A						Ø5
NXG-6.5A-21	B	70	190	155	1.27	1.47	Ø5
NXG-7.5A-21	B						Ø5
NXG-10A-21	B						Ø5
NXG-16A-21	C	90	235	155	2.05	2.26	Ø6
AC 3PH 200V–240V							
NXG-1.5A-23	A	60	190	155	1.23	1.34	Ø5
NXG-2.5A-23	A						Ø5
NXG-4.2A-23	A						Ø5
NXG-6.5A-23	B	70	190	155	1.23	1.34	Ø5
NXG-7.5A-23	B						Ø5
NXG-10A-23	B						Ø5
NXG-16A-23	C	90	235	155	2.05	2.26	Ø6
NXG-20A-23	C						Ø6
NXG-30A-23	D	130	250	185	3.55	4.05	Ø6
NXG-42A-23	D						Ø6
NXG-55A-23	E	160	300	190	4.9	5.4	Ø6
AC 3PH 380V–480V							
NXG-1.5A-43	A	60	190	155	1.23	1.34	Ø5
NXG-2.5A-43	A						Ø5
NXG-3A-43	A						Ø5
NXG-4.2A-43	B	70	190	155	1.23	1.34	Ø5
NXG-5.5A-43	B						Ø5
NXG-7.5A-43	B						Ø5
NXG-9.5A-43	B						Ø5
NXG-14A-43	C	90	235	155	2.05	2.26	Ø6
NXG-18.5A-43	C						Ø6
NXG-25A-43	D	130	250	185	3.55	4.05	Ø6
NXG-32A-43	D						Ø6
NXG-38A-43	E	160	300	190	4.9	5.4	Ø6
NXG-45A-43	E						Ø6

Appendix D Cable specifications

VFD model	L1/L, L2/N, L3, PB, (+), (-) recommended cable size		U, V, W recommended cable size		PE recommended cable size	
	mm²	AWG	mm²	AWG	mm²	AWG
AC 1PH 200V–240V						
NXG-1.5A-21	1.5	14	1.5	14	1.5	14
NXG-2.5A-21	1.5	14	1.5	14	1.5	14
NXG-4.2A-21	1.5	14	1.5	14	1.5	14
NXG-6.5A-21	2.5	12	1.5	14	2.0	12
NXG-7.5A-21	4	10	1.5	14	4	10
NXG-10A-21	4	10	2.5	12	4	10
NXG-16A-21	10	8	2.5	12	10	8
AC 3PH 200V–240V						
NXG-1.5A-23	1.5	14	1.5	14	1.5	14
NXG-2.5A-23	1.5	14	1.5	14	1.5	14
NXG-4.2A-23	1.5	14	1.5	14	1.5	14
NXG-6.5A-23	1.5	14	1.5	14	1.5	14
NXG-7.5A-23	1.5	14	1.5	14	1.5	14
NXG-10A-23	2.5	12	2.5	12	2.5	12
NXG-16A-23	10	8	4	10	10	8
NXG-20A-23	10	8	10	8	10	8
NXG-30A-23	16	6	10	8	16	6
NXG-42A-23	16	6	16	6	16	6
NXG-55A-23	35	3	25	4	35	3
AC 3PH 380V–480V						
NXG-1.5A-43	1.5	14	1.5	14	1.5	14
NXG-2.5A-43	1.5	14	1.5	14	1.5	14
NXG-3A-43	1.5	14	1.5	14	1.5	14
NXG-4.2A-43	1.5	14	1.5	14	1.5	14
NXG-5.5A-43	1.5	14	1.5	14	1.5	14
NXG-7.5A-43	2.5	12	1.5	14	2.0	12
NXG-9.5A-43	4	10	1.5	14	4	10
NXG-14A-43	10	8	4	10	10	8
NXG-18.5A-43	10	8	4	10	10	8
NXG-25A-43	16	6	10	8	16	6
NXG-32A-43	16	6	10	8	16	6
NXG-38A-43	25	4	16	6	25	4
NXG-45A-43	35	3	25	4	35	3

Appendix E Breaker and Contactor

Inverter model	Breaker rated current (A)	Contactor rated current (A)
AC 1PH 200V–240V		
NXG-1.5A-21	6	9
NXG-2.5A-21	10	9
NXG-4.2A-21	16	12
NXG-6.5A-21	20	18
NXG-7.5A-21	25	25
NXG-10A-21	32	32
NXG-16A-21	40	38
AC 3PH 200V–240V		
NXG-1.5A-23	6	9
NXG-2.5A-23	6	9
NXG-4.2A-23	10	9
NXG-6.5A-23	16	12
NXG-7.5A-23	20	18
NXG-10A-23	25	25
NXG-16A-23	40	32
NXG-20A-23	50	40
NXG-30A-23	63	65
NXG-42A-23	80	65
NXG-55A-23	100	95
AC 3PH 380V–480V		
NXG-1.5A-43	6	9
NXG-2.5A-43	10	9
NXG-3A-43	10	9
NXG-4.2A-43	16	12
NXG-5.5A-43	16	12
NXG-7.5A-43	20	18
NXG-9.5A-43	20	18
NXG-14A-43	32	32
NXG-18.5A-43	40	32
NXG-25A-43	50	50
NXG-32A-43	63	65
NXG-38A-43	80	65
NXG-45A-43	100	95

Appendix F Fuse

Inverter model	Max short-circuit current	Fuse type	Fuse rating
AC 1PH 200V–240V			
NXG-1.5A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 6A, CLASS J
NXG-2.5A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 10A, CLASS J
NXG-4.2A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-6.5A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-7.5A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 20A, CLASS J
NXG-10A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 25A, CLASS J
NXG-16A-21	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 35A, CLASS J
AC 3PH 200V–240V			
NXG-1.5A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 5A, CLASS J
NXG-2.5A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 8A, CLASS J
NXG-4.2A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 10A, CLASS J
NXG-6.5A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-7.5A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-10A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-16A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 30A, CLASS J
NXG-20A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 35A, CLASS J
NXG-30A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 60A, CLASS J
NXG-42A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 60A, CLASS J
NXG-55A-23	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 90A, CLASS J
AC 3PH 380V–480V			
NXG-1.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 5A, CLASS J
NXG-2.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 8A, CLASS J
NXG-3A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 8A, CLASS J
NXG-4.2A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 10A, CLASS J
NXG-5.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 12A, CLASS J
NXG-7.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 15A, CLASS J
NXG-9.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 20A, CLASS J
NXG-14A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 35A, CLASS J
NXG-18.5A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 35A, CLASS J
NXG-25A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 60A, CLASS J
NXG-32A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 60A, CLASS J
NXG-38A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 80A, CLASS J
NXG-45A-43	65kA	Non-semiconductor fuse (JDDZ/7)	600V, 90A, CLASS J

Appendix G Energy efficiency data

Inverter model	Relative loss (%)								Standby loss (W)	IE class
	(0;25)	(0;50)	(0;100)	(50;25)	(50;50)	(50;100)	(90;50)	(90;100)		
NXG-1.5A-21	2.45	2.78	2.98	2.8	3.01	3.26	3.08	3.29	7	IE2
NXG-2.5A-21	1.96	2.24	2.54	2.05	2.4	2.65	2.52	2.81	7	IE2
NXG-4.2A-21	1.48	1.68	1.84	1.54	1.84	2.54	1.93	2.71	7	IE2
NXG-6.5A-21	1.39	1.61	2.21	1.68	1.9	2.55	2.03	2.71	7	IE2
NXG-7.5A-21	1.41	1.44	1.91	1.69	1.91	2.35	1.92	2.59	7	IE2
NXG-10A-21	1.2	1.42	2.02	1.38	1.68	2.41	1.75	2.95	7	IE2
NXG-16A-21	1.33	1.65	2.34	1.47	1.84	2.74	2.04	3.09	11	IE2
NXG-1.5A-23	2.39	2.69	2.97	2.66	2.95	3.2	3.02	3.24	7	IE2
NXG-2.5A-23	1.95	2.19	2.5	2.13	2.38	2.74	2.45	2.81	7	IE2
NXG-4.2A-23	1.48	1.67	2.26	1.59	1.84	2.5	1.9	2.62	7	IE2
NXG-6.5A-23	1.28	1.52	2.08	1.56	1.77	2.23	1.84	2.42	7	IE2
NXG-7.5A-23	1.36	1.44	1.77	1.68	1.73	1.94	1.87	2.34	7	IE2
NXG-10A-23	1.31	1.37	1.72	1.6	1.73	1.95	1.82	2.2	7	IE2
NXG-16A-23	1.45	1.63	1.93	1.51	1.72	2.1	1.9	2.26	11	IE2
NXG-20A-23	0.79	1.32	1.99	0.87	1.34	2.22	1.41	2.39	11	IE2
NXG-30A-23	0.62	0.9	1.76	0.8	1.15	2.04	1.46	2.28	14	IE2
NXG-42A-23	0.54	0.78	1.87	0.77	1.18	2.09	1.23	2.48	14	IE2
NXG-55A-23	0.92	0.93	0.95	1.06	1.37	1.49	2.6	2.98	16	IE2
NXG-1.5A-43	2.13	2.28	2.59	2.2	2.54	2.81	2.54	2.94	9	IE2
NXG-2.5A-43	1.41	1.64	2.11	1.67	1.86	2.29	1.92	2.43	9	IE2
NXG-3A-43	1.45	1.61	1.83	1.64	1.94	2.16	2.03	2.29	9	IE2
NXG-4.2A-43	1.25	1.34	1.52	1.41	1.63	2.01	1.62	2.15	9	IE2
NXG-5.5A-43	1.27	1.29	1.61	1.56	1.77	2.12	1.61	2.23	9	IE2
NXG-7.5A-43	1.19	1.27	1.55	1.48	1.65	2.01	1.59	2.11	9	IE2
NXG-9.5A-43	1.11	1.21	1.46	1.34	1.62	1.83	1.54	2.35	9	IE2
NXG-14A-43	1.22	1.37	1.56	1.46	1.77	2.12	1.77	2.26	11	IE2
NXG-18.5A-43	0.76	0.96	1.54	0.98	1.17	1.91	1.22	2.04	11	IE2
NXG-25A-43	0.79	0.89	1.79	0.78	0.9	1.77	0.93	1.8	20	IE2
NXG-32A-43	0.7	1.01	1.98	0.74	1.02	1.87	1.17	2.23	20	IE2
NXG-38A-43	0.53	0.76	1.23	0.56	0.86	1.73	0.86	2.01	20	IE2
NXG-45A-43	0.63	0.71	1.38	0.6	0.9	1.73	1.02	1.95	20	IE2

NOTES

IMO Worldwide Offices

IMO Precision Controls Limited
The Interchange
Frobisher Way
Hatfield, Herts AL10 9TG
United Kingdom

Tel: 01707 414 444

Email: imo@imopc.com
Web: www.imopc.com

IMO Jeambrun Automation SAS
Parc de la Broye
14 rue du Chaufour
59710 ENNEVELIN
France

Email: imo-fr@imopc.com
Web: www.imojeambrun.fr

IMO Automazione
Via Belfiore 10,
50144 Firenze (FI)
Italia

Tel: 800 930 872 (toll free)

Email: imo-it@imopc.com
Web: www.imopc.it

IMO Automation LLC
Suite 112,
5910 Shiloh Road East
Alpharetta, GA 30005
USA

Tel: 404 476 8810

Email: sales-na@imopc.com
Web: www.imoautomation.com

IMO Canada
1B-701 Rossland Road East
Suite #608
Whitby, Ontario L1N 9K3
Canada

Tel: 416 639 0709

Email: sales-ca@imopc.com
Web: www.imopc.com

IMO South Africa (Pty) Ltd
Unit 5 Osdam Business Park
Columbus Crescent, Rivergate
Parklands, Cape Town 7441
South Africa

Tel: 021 551 1787
Fax: 021 555 0676
Email: info@imopc.co.za
Web: www.imopc.co.za

IMO Pacific Pty Ltd
Unit 9, Dillington Pass
Landsdale
Perth WA 6065
Australia

Tel: 1300 34 21 31

Email: sales@imopacific.com.au
Web: www.imopacific.com.au

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