

IMO

iDrive

EDX

**AC micro-inverters for small
3-phase induction motors**

100V series, 1-ph / 0.2 – 0.75kW

200V series, 1-ph & 3-ph / 0.2 – 2.2kW

400V series, 3-ph / 0.75 – 2.2kW

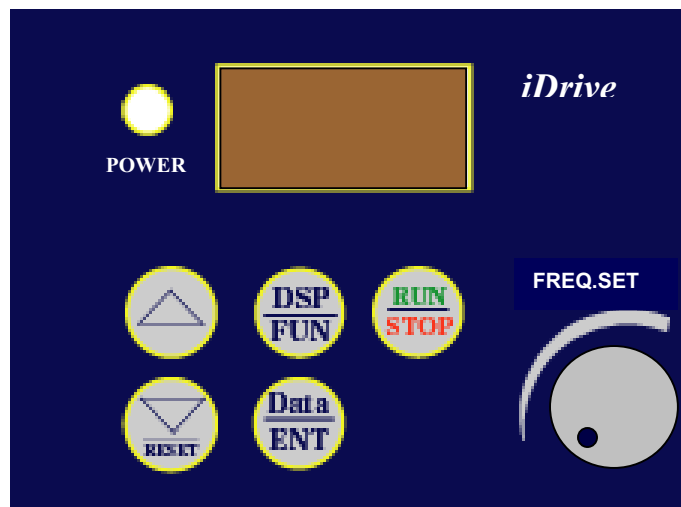
Quick Start Guide

This guide is to assist in installing and running the inverter to verify that the drive and motor are working properly. Starting, stopping and speed control will be from the keypad. If your application requires external control or special system programming, consult the *iDrive* EDX instruction manual supplied with your inverter.

Step 1 - Before starting the inverter

Please refer to chapter one (Preface) and chapter two (Safety Precautions) of the *iDrive* EDX instruction manual. Verify drive is installed in accordance with the procedures as described in chapter three (Environment and installation). If something is suspected of being abnormal, do not start the drive until qualified personnel have corrected the situation. (Failure to do so could result in death or serious injury.)

- Check inverter and motor nameplates to determine that they have the same power and voltage ratings. Ensure that full load motor current does not exceed that of the inverter.
- With power OFF, remove the terminal covers to expose the motor and power terminals.
 - a. Verify that AC power is wired to L1(L), L2, and L3(N) .
 - b. Verify that motor leads are connected to T1, T2, and T3 .
 - c. If a brake module is necessary, please connect terminal voltage of the braking unit to P and N of the inverter. Never connect a resistor directly to terminals P and N.



Step 2 - Apply power to the drive

Apply AC power to the drive and observe the keypad display. The 7-segment LED display should show power voltage for 3~5 seconds and then show Frequency Command, factory set at 5.00. (Frequency Command shown on 7-segment display should be flashing.)

Step 3 - Check low speed motor rotation without load.

- Press RUN key. 7-segment display will indicate 00.0 to 05.0. This number is the frequency output value. The display will now become solid (not blinking) because the inverter output is on.
- Check the operating direction of the motor.
IF the direction of the motor is incorrect:
Press STOP key, turn off the AC power supply. When the power indicator LED is off, change over motor connections T1 and T2.
Apply the power again, then check the motor direction.
- Press STOP key.

Step 4 - Check full speed at 50Hz / 60Hz

- Change the frequency with ▲, ▼ keys, press DATA/ENT after setting frequency.
- Set frequency to 50Hz / 60Hz according to the above.
- Press RUN key; check that the motor accelerates smoothly to full speed.
- Press STOP key; check that the motor decelerates smoothly to zero speed.

Step 5 - Other settings

For other functions, please refer to *iDrive* EDX user manual.

Upper frequency limit	P. 4-9
Lower frequency limit	P. 4-9
Acceleration time	P. 4-10
Deceleration time	P. 4-10
Control mode (Vector, V/F)	P. 4-10
Motor rated current	P. 4-13

iDrive EDX user manual

Contents

Quick Start Guide	i
Chapter 0 Preface	0-1
0.1 Preface	0-1
0.2 Product inspection	0-1
Chapter 1 Safety precautions.....	1-1
1.1 Operation precautions.....	1-1
1.1.1 Before power up.....	1-1
1.1.2 During power up.....	1-2
1.1.3 Before operation	1-2
1.1.4 Leakage current!	1-2
1.1.5 During operation.....	1-3
1.1.6 Operating environment	1-3
Chapter 2 Part number description	2-1
Chapter 3 Environment description and installation.....	3-1
3.1 Environment	3-1
3.2 Environment precautions.....	3-6
3.3 Electrical Installation.....	3-7
3.3.1 Notice for wiring.....	3-7
3.3.2 MC, MCCB, Fuse and cable specifications	3-9
3.3.3 Ancillary power equipment – supply side.....	3-10
3.3.4 EMC: Good wiring practice – motor side.....	3-11
3.4 Specification	3-13
3.4.1 Product individual specification.....	3-13
3.4.2 General specifications.....	3-14
3.5 Connection diagram.....	3-16
3.6 Description of inverter terminals	3-17
3.7 <i>iDrive</i> Dimensions	3-20
3.8 Multi-<i>iDrive</i> installation with regenerative loads.....	3-23

Chapter 4 Programming instructions & Parameter list.....	4-1
4.1 Keypad description.....	4-1
4.1.1 Keypad display and operation instruction.....	4-1
4.1.2 Keypad navigation.....	4-1
4.2 Parameter function list.....	4-3
4.3 Parameter function description.....	4-9
Chapter 5 Trouble shooting and maintenance.....	5-1
5.1 Fault indication and remedy.....	5-1
5.1.1 Fault/Error display and Diagnostics.....	5-1
5.1.2 Set up & Interface Errors	5-4
5.1.3 Keypad operation error descriptions.....	5-5
5.2 General functional troubleshooting.....	5-6
5.3 <i>iDrive</i> Troubleshooting flowcharts	5-7
5.4 Routine and periodic checks.....	5-13
5.5 Maintenance and inspection.....	5-14
Chapter 6 Options.....	6-1
6.1 Option cards.....	6-1
6.1.1 RS-485 option card.....	6-1
6.1.2 RS-232 option card.....	6-2
6.1.3 Program copy option card.....	6-3
6.1.4 Remote keypad	6-4
6.1.5 2 IN/OUT Card	6-5
Appendix 1 <i>iDrive</i> EDX inverter parameter setting list.....	Appendix 1

Chapter 0 Preface

0.1 Preface

To extend the performance of the product and ensure your safety, read this manual thoroughly before using the inverter. Should there be any problem in using the product that can not be solved with the information provided in the manual, contact your nearest IMO distributor or the company from who you purchased the inverter from.

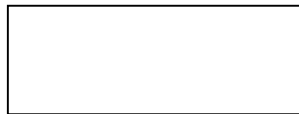
Precautions

The inverter is an electrical / electronic product. For your safety, there are symbols such as “Danger” and “Caution” in this manual to remind you to pay attention to safety instructions on carrying, installing, operating, and checking the inverter. Be sure to follow the instructions carefully for safety.



Danger

Indicates a potential hazard that may cause death or serious personal injury if misused



Indicates that the inverter or a mechanical system might be damaged if misused



Danger

- Do not touch any circuit boards or internal parts until the charge indicator is extinguished after turning the power off.
- Do not connect any wires when the inverter is powered. Do not check parts and signals on circuit boards when the inverter is in operation.
- Do not disassemble the inverter and modify internal wires, circuits and parts.
- Connect the ground terminal of the inverter correctly. Always follow local / national regulations.



Caution

- Do not perform a high voltage insulation test on parts inside the inverter. High voltages can easily destroy the inverter's semiconductor components.
- Do not connect T1 (U), T2 (V), and T3 (W) terminals of the inverter to AC power source.
- CMOS ICs on the inverter's main board are sensitive to static electricity.
Do not touch the main p c board even when power is off, or damage may occur.

0.2 Product Inspection

iDrive EDX inverters have all passed a full function test before delivery. Please check the following when you receive and unpack the inverter:

- The model and capacity of the inverter is the same as those specified on your order.
- Is there any damage caused by transportation? If so, do not apply power.
Contact IMO distributor or sales representative if any of the above are found to be incorrect..

Chapter 1 Safety Precautions

1.1 Operation Precautions

1.1.1 Before Power Up

 **Caution**

The line voltage applied must comply with the inverter's specified input voltage.

 **Danger**

Make sure the main circuit connections are correct. L1(L), L2, and L3(N) are power-input terminals and must not be confused with T1, T2 and T3. Otherwise, the inverter might be damaged.

 **Caution**

- To avoid the front cover from disengaging, do not pull the cover when carrying the inverter for which the heat sink should be held. Avoid dropping the inverter as damage could occur.
- To avoid fire, do not install the inverter on a flammable surface. Always install on metal surface if possible.
- If several inverters are placed in the same control panel, add extra heat dissipators to keep the temperature below 50°C to avoid overheating or fire.
- When removing or installing the remote keypad, turn the power off first, and operate the keypad following the instruction diagrams to avoid error or no display caused by poor contact.

Warning

This product complies with IEC 61800-3, with built-in filter for Unrestricted Distribution and when using an external filter for Restricted Distribution. Conformance should be tested before use in some environments.

1.1.2 During Power up

Danger

- The inverter still has control power if the time of power loss is very short. When the power is re-supplied, the inverter operation is controlled by F41.
- The inverter operation is controlled by F04 and C09 and the status of (FWD/REV RUN switch) when power is re-applied. (and F39 /F40) Power loss ride through / Auto reset after fault.
 1. When F04=000, the inverter will not auto restart when power is re-applied.
 2. When F04=001 and operation switches (FWD/REV RUN) are OFF, the inverter will not auto restart when power is re-applied.
 3. When F04=001 and operation switch ON and C09=000, the inverter will auto restart when power is re-applied. Please turn OFF the run (start) switch to avoid damage to machine and injury to operator before the power is re-applied.
- When C09=000 (direct start on power up), please refer to the description of C09 to verify the safety of operator and machine.

1.1.3 Before operation

Caution

Make sure the model and capacity are the same as those set by F00.

1.1.4 Earth / ground leakage current

Warning

Warning ! *iDrive EDX* series built-in filter type can give leakage current > 3.5mA.

ALWAYS ENSURE INVERTER IS CORRECTLY EARTHED / GROUNDED..

Operation with ungrounded supplies:

DO NOT use *iDrive EDX* inverters on ungrounded (floating) power supplies.

Operating *iDrive EDX* with Residual Current Device (RCD):

1. Inverter leakage current may cause nuisance trip when RCD setting is <100mA
2. Only one inverter should be supplied from each RCD.

1.1.5 During operation



Danger

Do not connect or disconnect the motor while inverter is operating the motor otherwise the inverter and/or the disconnecting device may be damaged by the high level of switch-off current.



Danger

- To avoid electric shock, do not remove the front cover when power is on.
After a power-loss trip (under-volt) trip occurs, the motor will restart automatically when power is restored if auto-restart function is set. In this case, care must be taken while working with the machine.
- Note: External Emergency stop must open and un-latch the power supply to the inverter without any chance of re-closing until required. Do not rely upon software control for Emergency stop.



Caution

- Do not touch heat-generating components such as heat sink and brake resistor.
- The inverter can operate the motor from low speeds to very high speeds.
Verify the allowable speed ranges of the motor and the load before operation.
- Note the settings related to the braking unit.
- Do not check signals on circuit PCB while the inverter is running.



Caution

Allow a minimum of 5 minutes after power down before attempting to disassemble or checking the components within the drive.

1.1.6 Operating environment




Caution

When the inverter top dust cover has been removed it can be used in a non-condensing atmosphere in temperature range from -10°C to $+50^{\circ}\text{C}$ and relative humidity of 95%, but the environment should be free from corrosive gasses, condensation and metallic dust.

Chapter 2 Part numbering description

iDrive product rating label (example)

	CAUTION	Do not inspect components unless the lamp is off See manual for correct installation and operation	
Model:	EDX-040-21-E	Motor Rating:	0.5HP / 0.4KW
INPUT:	AC 1 phase 50 / 60Hz	VOLTAGE:	200 – 240V (+10%, -15%) I_{RMS} : 5.4A
OUTPUT:	AC 3 phases 0 – 200Hz	VOLTAGE:	0 - V_{IN} I_{RMS} : 3.1A
IP20 / UL Open Type (rated -10°C to 50°C Ambient)			
IMO Precision Controls Ltd			
WARNING: THIS PRODUCT MUST BE EARTHED!			

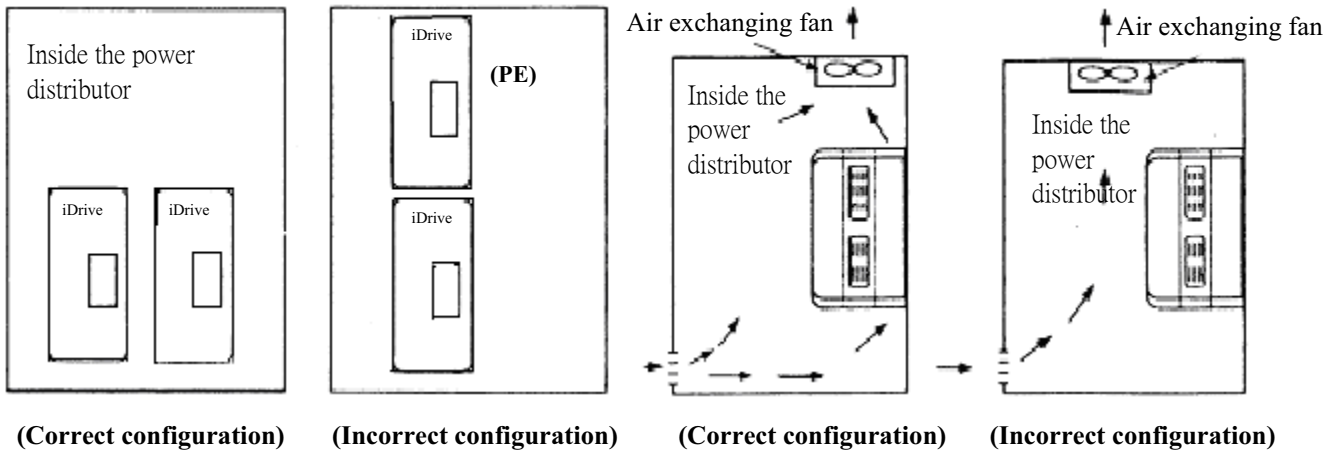
EDX	-	040	-	2	1	-	E	-
Series:		Nominal motor capacity:		Input voltage:	Input phases		EMC filter :	Enclosure
		020: 0.18kW / 0.25 HP		1:100V	1:Single phase		E: Integrated Filter	N4S: IP65 + water and dust-proof switch
		040: 0.37kW / 0.5 HP		2:230V	3:Three phase		Blank: No Filter	
		075: 0.75kW / 1.0 HP		4:400V				N4:IP65 without water and dust-proof switch
		150: 1.5kW / 2.0 HP						
		220: 2.2kW / 3.0 HP						Blank: IP20

Chapter 3 Environment description and installation

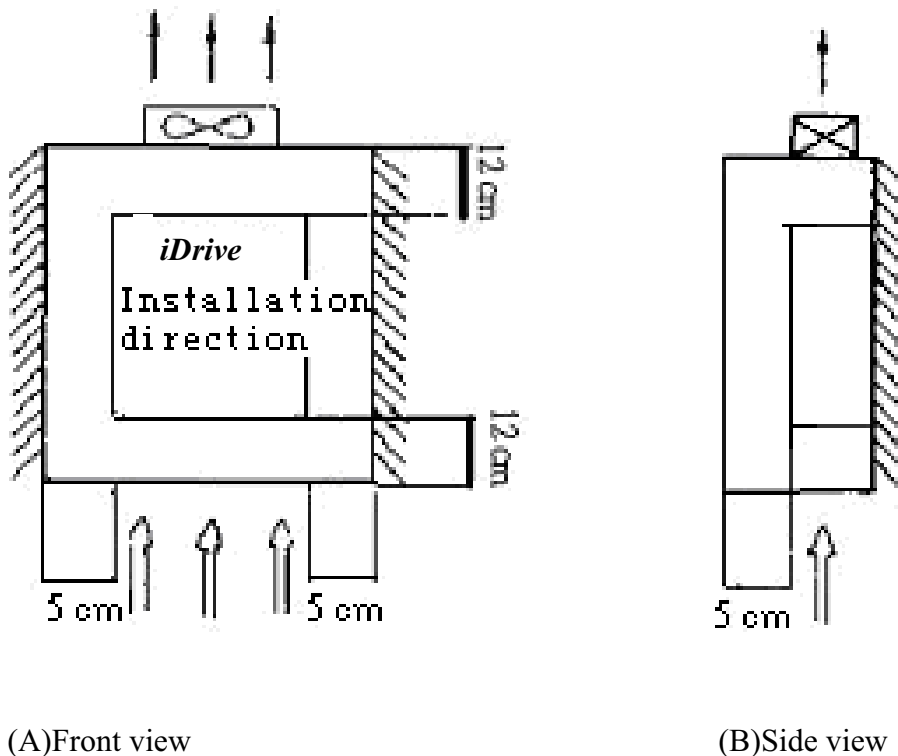
3.1 Environment

The environment will directly effect the operation and the life of the inverter, so install the inverter in an environment that complies with the following conditions:

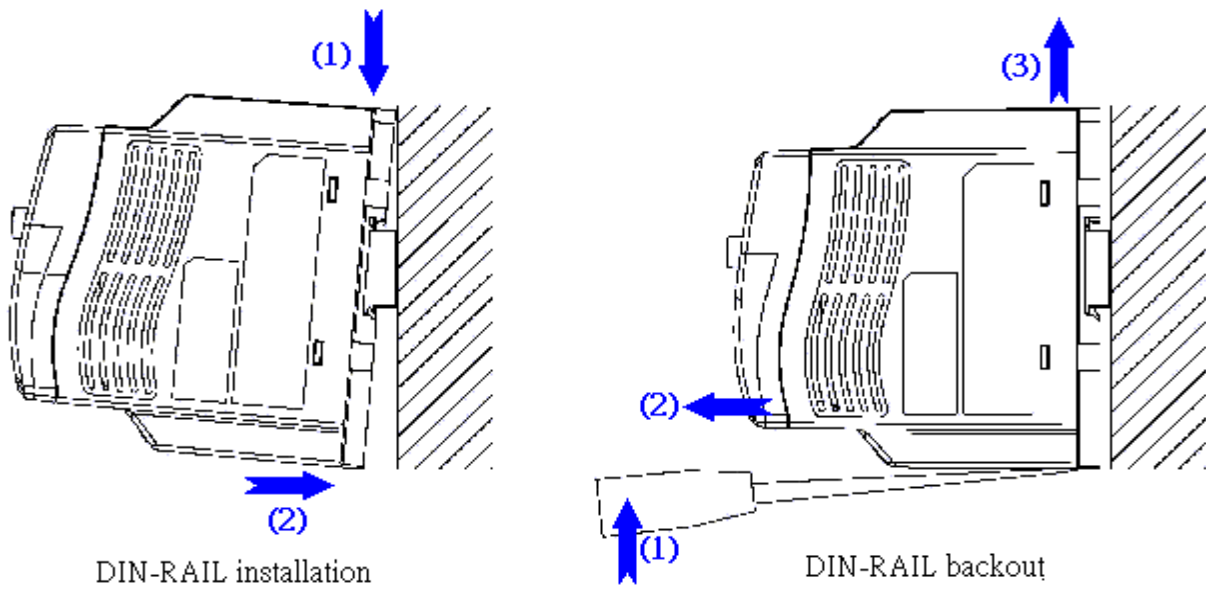
- Ambient temperature: $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- Avoid exposure to rain or moisture.
- Avoid smoke and salinity.
- Avoid dust and small metal pieces.
- Avoid electromagnetic interference (soldering machine, power machine).
- Avoid vibration (punching machine). Add a vibration-proof pad if the situation can not be avoided.
- If several inverters are placed in the same control panel, add extra heat dissipators to keep the temperature below 50°C .
- Avoid direct sunlight.
- Avoid erosive liquid and gas.
- Keep away from radiative and flammable materials.



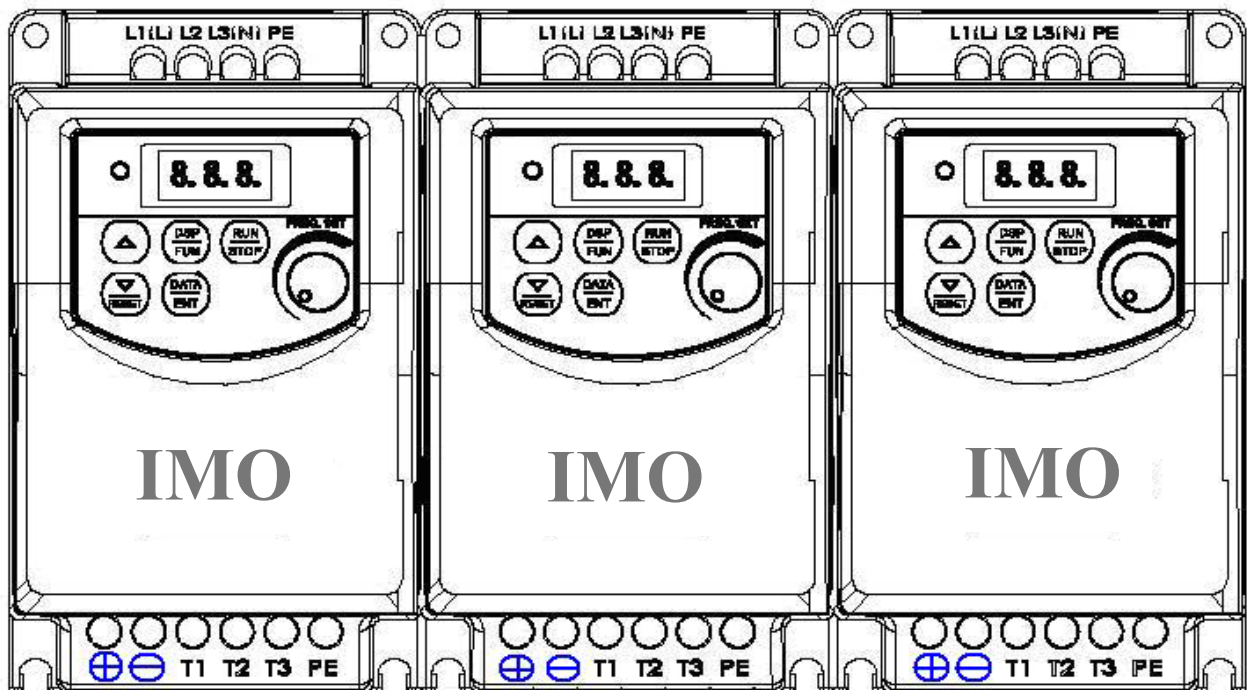
- Place the front side of the inverter onward and top upward to help heat dissipation.



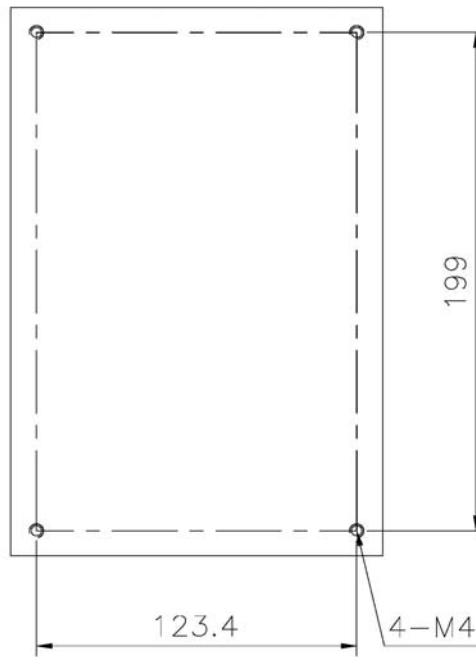
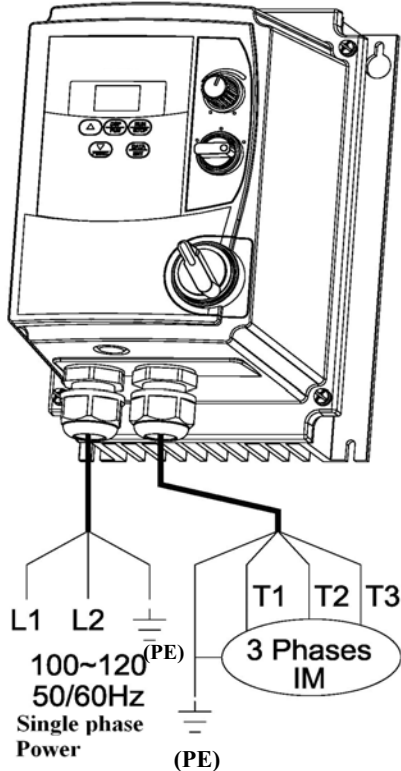
- The chassis of this model has DIN rail clip device to use when rail mounting.



- This model also can be installed side-by-side (when inside temperature below 50□).



● ***iDrive* EDX-###-##-N4X(IP65) type installation:**

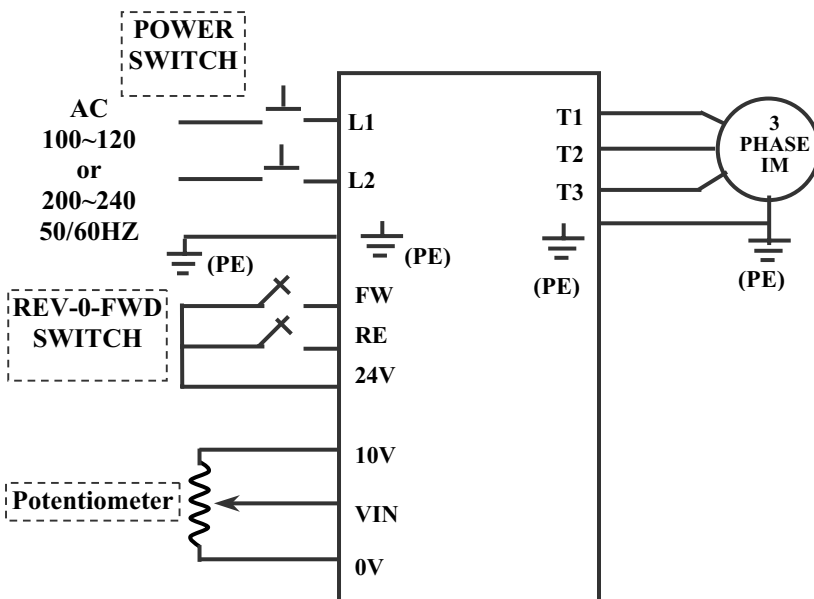


NOTE :

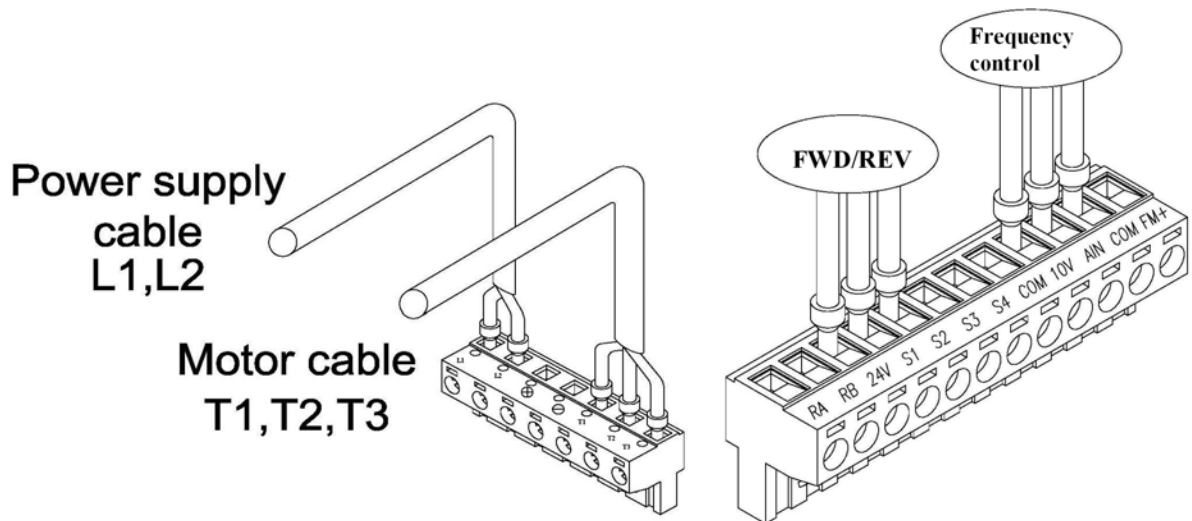
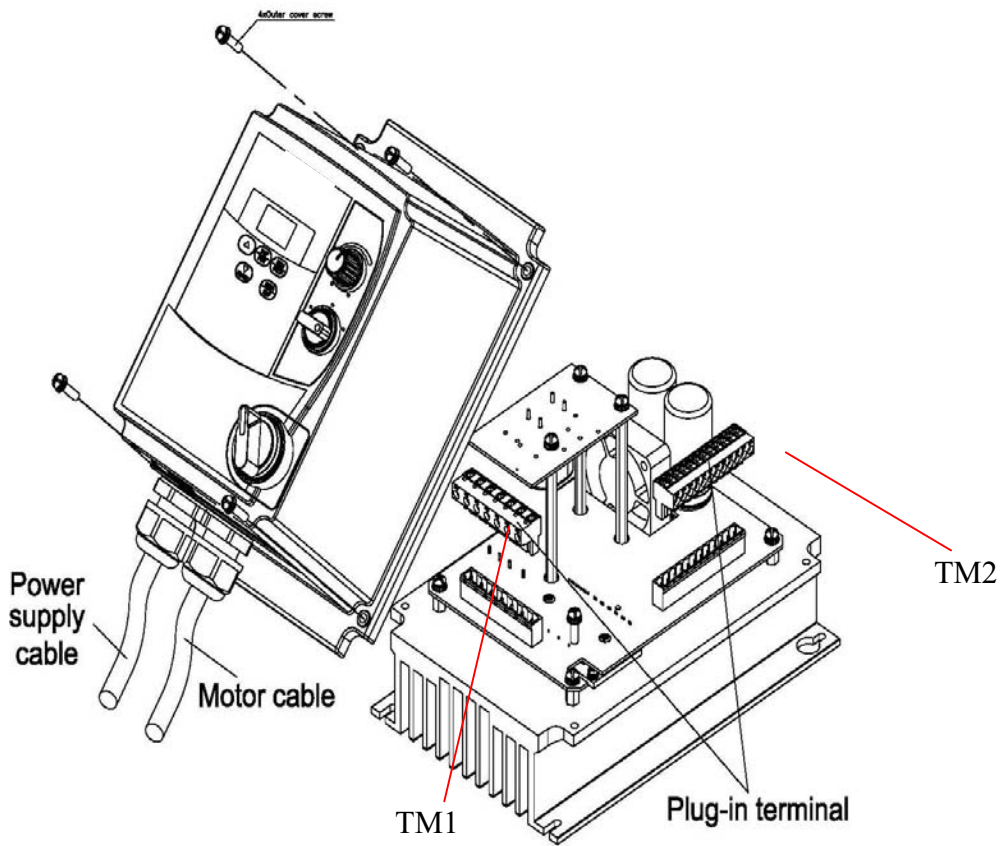
1. Power switch , REV-0-FWD switch and potentiometer are only for EDX-#####- N4S TYPE
2. Power supply cable : 600V AC rated PVC
3. Motor cable : 600V AC rated PVC / (screened or armoured)/PVC
4. Maximum torque on terminal screws :
 - (1). Power/motor cable (plug in) terminal : 5kg-cm(4.34 in-lb)
 - (2). Remote control wire : 4kg-cm (3.47 in-lb)
 - (3). Outer cover (M4) : 6kg-cm (5.20 in-lb)

NOTE:

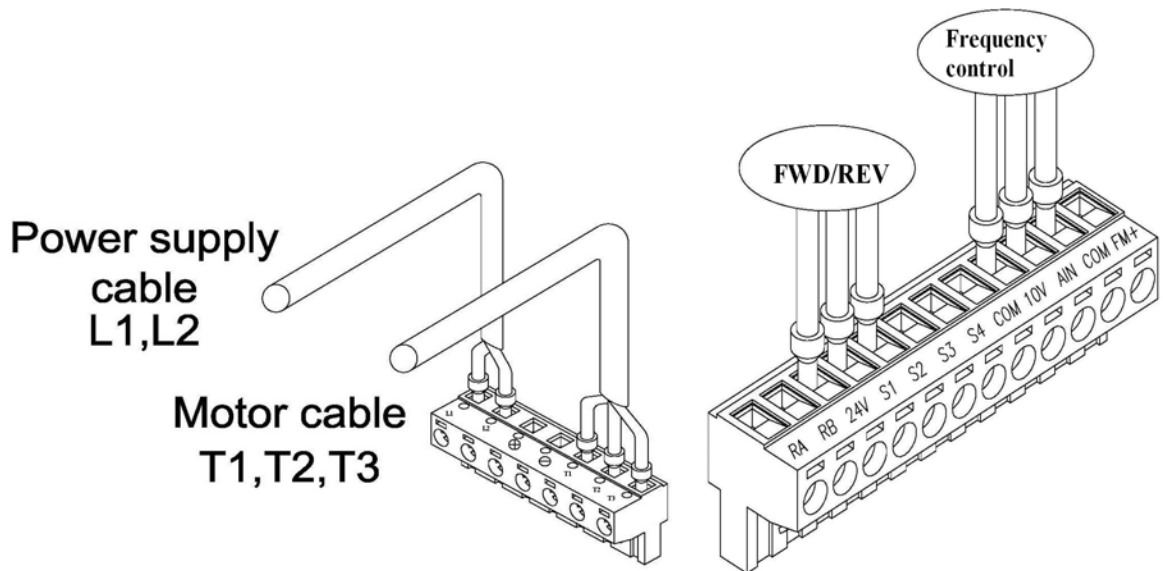
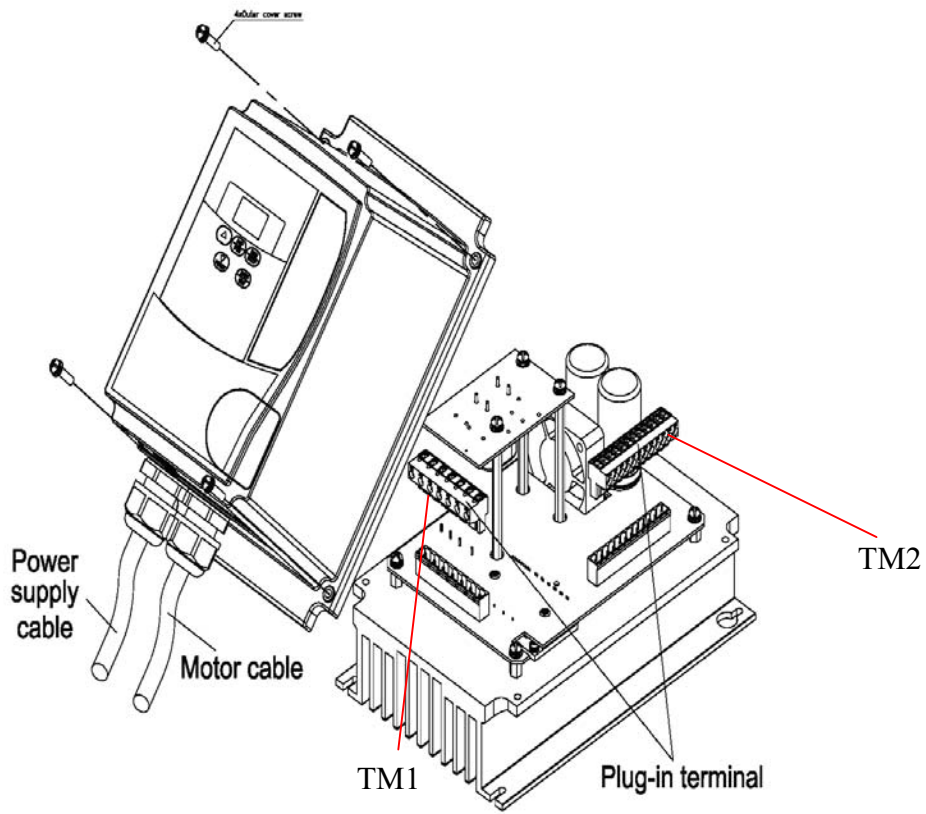
- (1). Input power : single-phase (L1,L2, PE) ensuring supply is 100~120 or 200~240 supply according to model type.
 - (2). Output / motor : three-phase (T1,T2,T3, PE).
 Caution : Do not start or stop the motor by switching input power
- For EV-#####-N4S type :
- Ensure that the REV-0-FWD switch is set at '0' position so that the *iDrive* has no run signal at power-on otherwise injury may result.



● EDX-###-##-N4S installation :

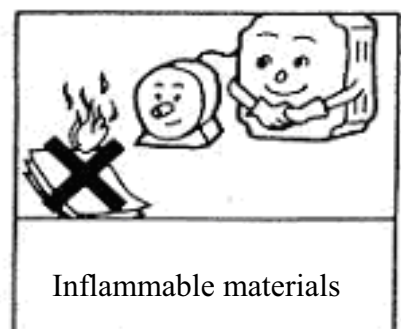
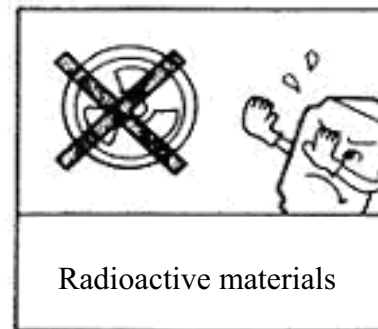
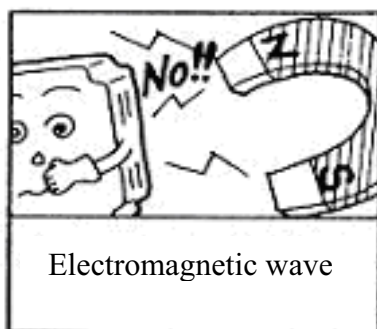
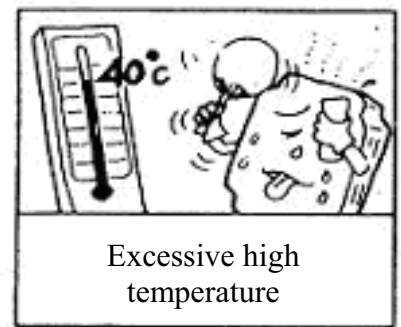
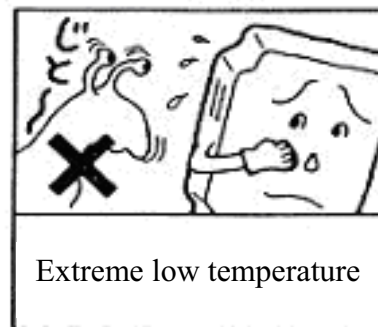
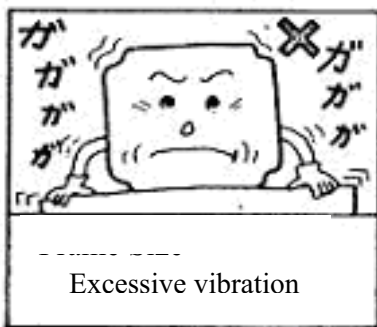
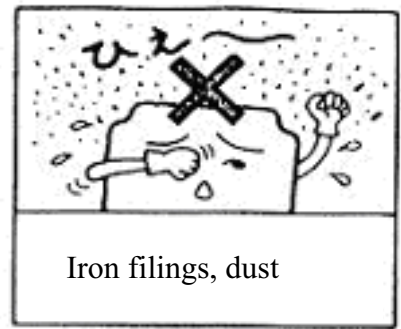
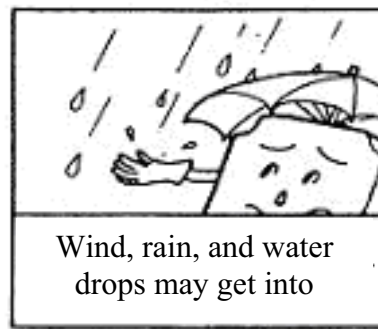
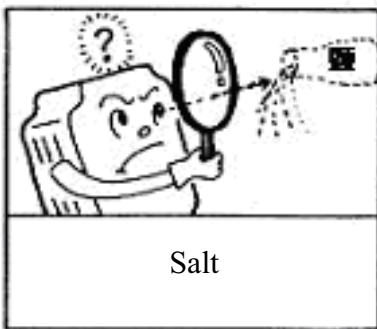
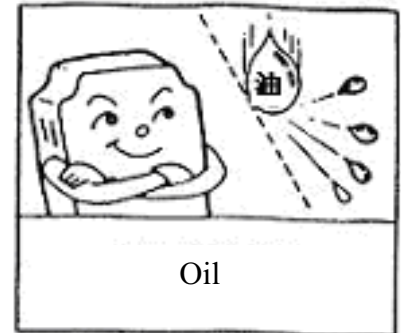
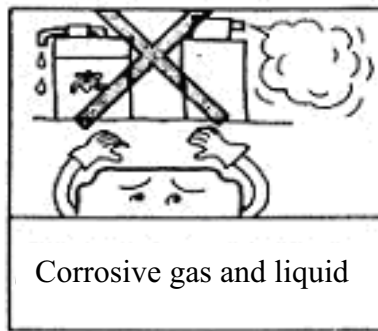
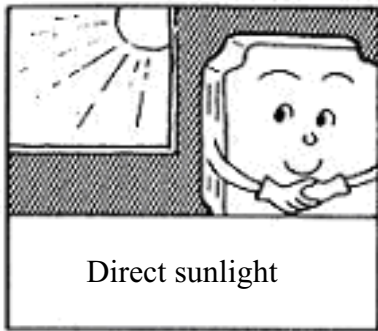


● EDX-###-##-N4 installation :



3.2 Environmental precautions

Do not use the inverter in an environment with the following conditions:



3.3 Electrical Installation

3.3.1 Notice for wiring

A. Screwdriver torque:

Connect cables with a screwdriver or other suitable tools and follow the torque listed below.

Tightening torque			
Horsepower	KW	Power source	Nominal torque for TM1 terminal
0.25/0.5/1	0.2/0.4/0.75	100-120V	0.74 / 1.00 (lbs-ft / Nm)
0.25/0.5/1	0.2/0.4/0.75	200-240V	
2/3	1.5/2.2	200-240V	1.286 / 1.74 (lbs-ft / Nm)
1/2/3	0.75/1.5/2.2	380-480V	

B. Power cables:

Power cables are wires connected to L1(L), L2, L3 (N), T1, T2, T3, P and N. Choose cable in accordance with the following criteria:

- (1) Use cable with copper cores only. Select cable with insulation diameter based on working conditions at 105°C.
- (2) For nominal voltage ratings, use cable rated at minimum 300V for 240Vac *iDrives* and 600V rated cable for 480Vac *iDrives*.

C. Control cables:

Control cables are connected to TM2 control terminals. Choose cable in accordance with the following criteria:

- (1) Use cable with copper cores only. Select cable with insulation diameter based on working conditions at 105°C.
- (2) For nominal voltage ratings, use cable rated at minimum 300V for 240Vac *iDrives* and 600V rated cable for 480Vac *iDrives*.
- (3) To avoid noise interference, do not run control cables in the same conduit or trunking as power cables.

D. Nominal electrical specifications of terminal block TM1:

KW	Horsepower	Power source	Volts	Amps
0.2 / 0.4 / 0.75	0.25 / 0.5 / 1	100-120V	600	15
0.2 / 0.4 / 0.75	0.25 / 0.5 / 1	200-240V		
1.5 / 2.2	2 / 3	200-240V	600	40
0.75 / 1.5 / 2.2	1 / 2 / 3	380-480V		

E. Fuse types

Drive input fuses are necessary to disconnect the drive from the power supply in the event of component failure in the drive's power input circuit. The *iDrive*'s electronic protection circuitry is designed to clear output short circuits and ground faults without blowing the input fuses. The table below shows the *iDrive* EDX input fuse ratings.

To protect the inverter most effectively, use fuses with current-limit function.

It is the responsibility of the user/installer to ensure that the correct fuse protection (or other) is applied.

RK5, CC/T TYPE FUSES FOR EDX

110V class(1 ϕ)

EDX-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
020-11	0.25	0.2	0.53	1.7	10	20
040-11	0.5	0.4	0.88	3.1	15	30
075-11	1	0.75	1.6	4.2	20	40

220V class(1 ϕ)

EDX-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
020-21	0.25	0.2	0.53	1.7	8	15
040-21	0.5	0.4	0.88	3.1	10	20
075-21	1	0.75	1.6	4.2	15	30
150-21	2	1.5	2.9	7.5	20	40
2.2-21	3	2.2	4.0	10.5	25	50

220V class(3 ϕ)

EDX-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
020-23	0.25	0.2	0.53	1.7	5	8
040-23	0.5	0.4	0.88	3.1	8	10
075-23	1	0.75	1.6	4.2	12	15
150-23	2	1.5	2.9	7.5	15	20
220-23	3	2.2	4.0	10.5	20	30

440V class(3 ϕ)

EDX--	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
075-43	1	0.75	1.7	2.3	6	10
150-43	2	1.5	2.9	3.8	10	15
220-43	3	2.2	4.0	5.2	10	20

UL class fuses have different overload characteristics.

RK5 - type has a time delay characteristic

T-type is quick-blow

CC – type have both types of characteristic

*Fuse ratings are based upon 250V fuses for 120V inverters, and 300V fuses for 240V inverters, and 600V for 480V inverters.

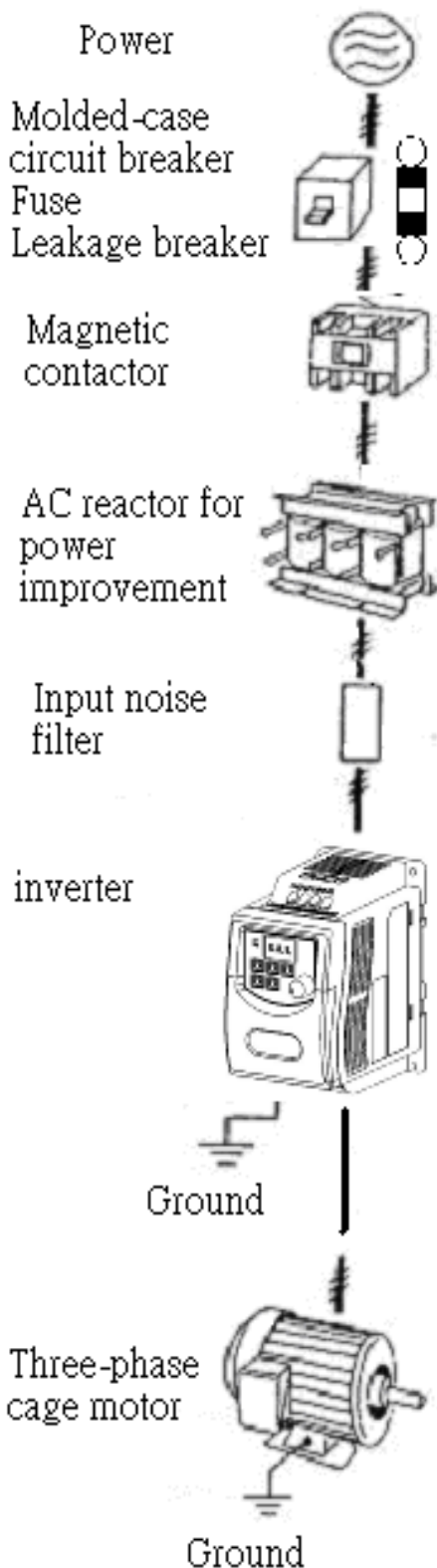
3.3.2 MC, MCCB, Fuse and cable specifications.**MCCB/ MC/ Fuse**

- IMO warranty will not apply under the following condition.
 - (1) MCCB or fuse is not installed or incorrectly installed or installed with over capacity, which has resulted in inverter failure.
 - (2) MC or capacitor or surge absorber is connected in series between inverter and motor.

<i>iDrive</i> EDX model	###-11/21/43 (-E)				###-43(-E)
	020-11/040-11 040-11/040-21	075-21 075-23	150-23	220-23	075/150/220
Fuse	10A 300Vac	16A 300Vac	20A 300Vac		16A/600Vac
MCCB	10A	20A	32A		16A
MC (from IMO)	MC14-S	MC18-S	MC32-S		MC18-S
Power terminals (TM1/TM3)	Cable dimension 2.5mm ² (13AWG.) Terminal screw M4		Cable dimension 4mm ² (11AWG) Terminal screw M4		Cable dimension 2.5mm ² (13AWG) Terminal screw M4
Control terminals (TM2)	Cable dimension 0.75mm ² (18AWG) Terminal screw M3				

- Use a single fuse for 1-phase input inverter models.
For 3-phase input models, each L1(L)/L2/L3(N) phase must be fused.
- Select suitable three-phase squirrel cage induction motor for inverter.
- If an inverter drives more than one motor in parallel, the total operating current should be less than the inverter rated current.
Suitable thermistor should be installed on each motor.
- Do not install capacitor, LC, RC between inverter and motor.

3.3.3 Ancillary power equipment – supply side:



Power supply:

- Make sure the voltage applied is correct to avoid damaging the inverter.
- If possible install a suitable moulded-case circuit breaker between the AC power source and the inverter.

Moulded-case circuit breaker MCCB:

- If possible use a moulded-case circuit breaker that conforms to the rated voltage and current of the inverter to control the power ON/OFF and protect the inverter.
- Do not use the inverter as the switch for run/stop switching.

Fuse:

- A suitable rated fuse(s) should be installed between the inverter and the AC power source to protect inverter if a MCCB has not been used.

Earth Leakage circuit breaker ELCB / RCD:

- If required, install an RCD to prevent error operation caused by leakage current and to protect operators. If possible use trip current range $>200\text{mA}$ and action time >0.1 seconds.

Magnetic contactor MC:

- If required use a suitably rated magnetic contactor. But a contactor has to be installed when performing functions such as external control and auto restart after power failure, or when using brake controller.
- Do not use the magnetic contactor as the run/stop switch for the inverter.

AC Reactor for power improvement ACR:

- When inverters are supplied with high capacity (above 600KVA) power source, an AC reactor can be installed between the inverter and the AC power source to improve Power Factor and reduce harmonic currents. Can also be used on the motor side when cable is very long. See next page.

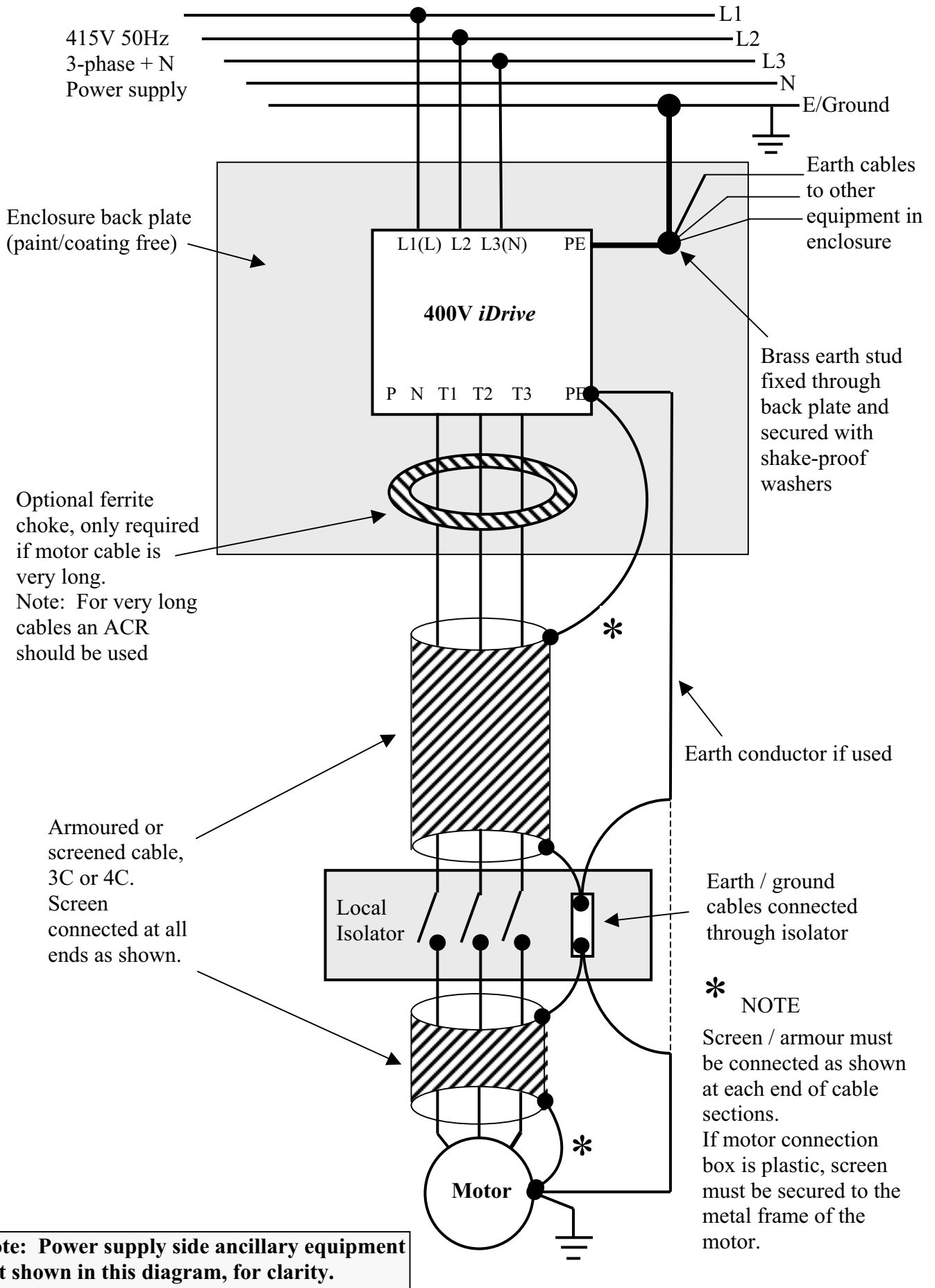
EMC filter:

Standard *iDrive EDX* inverters have an integrated EMC filter to reduce electromagnetic interference to other equipment connected to the same ACA power supply.

Inverter:

- Output terminals T1, T2, and T3 are connected to U, V, and W terminals of the motor.
- To avoid damaging the inverter, do not connect the input terminals T1, T2, and T3 to AC power.

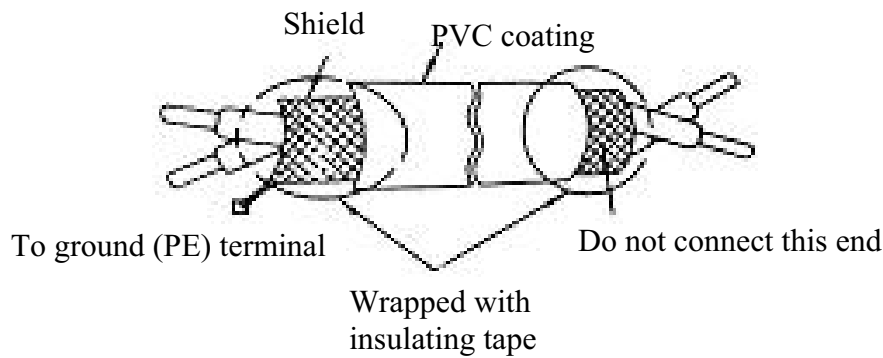
3.3.4 EMC: Good wiring practice – motor side



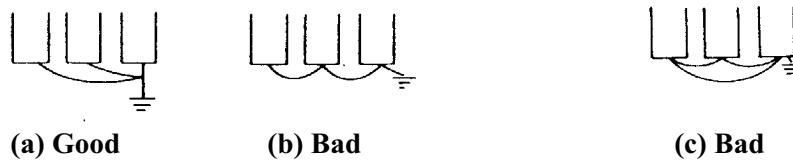
- A ferrite choke in the output of the main circuit can suppress conducted noise. To limit the effects of radiated noise, unscreened motor cable should be put in an earthed metal conduit. Do not run control cables inside conduit or within 30 cm of the motor cables.

If control/signal cables must cross over motor cables, ensure that they do so at right angles (90°).

- The supply and output (PE) terminals have to be connected to ground to increase noise immunity of the integrated EMC filter.
- In order to prevent noise interference resulting in inverter operation error, wire of control circuit should be shielded and twisted. Please refer to following diagram, connect shielded wire to ground terminal. The wiring distance should be less than 50m.



- Earth / ground wiring should be made as short and thick as possible. Copper braided tape is better than cable for this application, but not always practical.
- Do not 'daisy-chain' the earth / ground of the inverter to other equipment. Connect the (PE) terminal to a centralized main earth / ground point and 'star' connect all other equipment ground wires to this point.
- Do not make a loop when several inverters share a common ground point.



To ensure maximum safety, use correct wire size for the main power circuit and control circuit according to the required wiring regulations.

On completion, check that the wiring is correct and terminal screws are secured.

3.4 Specification

3.4.1 Product individual specification

<i>iDrive</i>	100V model			200V model									
	EDX-□□□-11			EDX-□□□-21(-E)					EDX-□□□-23				
	020	040	075	020	040	075	150	220	020	040	075	150	220
Horse power (HP)	0.25	0.5	1	0.25	0.5	1	2	3	0.25	0.5	1	2	3
Suitable motor capacity (kW)	0.2	0.4	0.75	0.2	0.4	0.75	1.5	2.2	0.2	0.4	0.75	1.50	2.2
Rated output current (A_{RMS})	1.7	3.1	4.2	1.7	3.1	4.2	7.5	10.5	1.7	3.1	4.2	7.5	10.5
Rated capacity (kVA)	0.53	0.88	1.60	0.53	0.88	1.60	2.90	4.00	0.53	0.88	1.60	2.90	4.00
Input voltage range(V)	1PH 100~120V+10%, -15%(50/60Hz)			1PH 200~240V+10%, -15%(50/60Hz)					3PH 200~240V+10%, -15%(50/60Hz)				
Output voltage range(V)	3PH 0~240V												
Input current (A_{RMS})	7.1	12.2	17.9	4.3	5.4	10.4	15.5	21	3.0	4.0	6.4	9.4	12.2
Net weight (Kg)	0.62	0.68	0.72	0.71	0.73	0.73	1.25	1.3	0.61	0.61	0.66	0.95	1
Allowable momentary power loss time (S)	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	2.0	2.0
Enclosure	IP20												

<i>iDrive</i>	400V model					
	EDX-□□□-43(-E)					
	075		150		220	
Horse power (HP)	1		2		3	
Suitable motor capacity (kW)	0.75		1.50		2.2	
Rated output current (A_{RMS})	2.3		3.8		5.2	
Rated capacity (kVA)	1.7		2.9		4.0	
Input voltage range(V)	3PH 380~480V+10%, -15%(50/60Hz)					
Output voltage range(V)	3PH 0~480V					
Input current (A_{RMS})	3.0		4.8		6.6	
Net weight (Kg)	1.68		1.70		1.73	
Allowable momentary power loss time (S)	1.0		2.0		2.0	
Enclosure	IP20					

Standard Models

Non-Standard Models

3.4.2 General Specifications

Frequency control	Output Frequency range	0~200Hz
	Starting torque	100% / 3Hz (Vector mode)
	Speed Control Range	1:50(Vector mode)
	Speed Control accuracy	±0.5% (Vector mode)
	Setting resolution ※1	Digital: 0.1Hz(0~99.9Hz)/1Hz(100~200Hz); analog: 0.06Hz/ 60Hz
	Keypad setting	Set directly with ▲ ▼ keys or the potentiometer VR on the keypad
	Display / Indication	7 segment*3. Displays frequency / DC voltage / output voltage / output current / inverter parameters / alarm log /software version / PID feedback control
	External signal setting	<ul style="list-style-type: none"> •External variable resistor / 0-10V/ 4-20mA •Performs up/down control (Motorized Pot.) with multi-function programmable inputs on the terminal base.
	Frequency limit functions	Possible to set Upper and Lower frequency limits, and two-stage skip-frequencies.
General control	Carrier frequency	4~16KHz (default 10KHz, above 10KHz with de-rating)
	V/F pattern	Select 6 fixed patterns 50Hz/60Hz or 1 user programmable pattern
	Acc/dec control	Two independent sets of accel / decel ramps (0.1~999s)
	Multi-function analog output	6 functions (refer to F26 description)
	Multi-function input	19 functions (refer to F11~F14 description)
	Multi-function output	16 functions (refer to F21 description)
	DI (digital input)	Selectable NPN/PNP: 4 inputs (S1~S4) as standard; 2 expansion inputs (S5~S6) available on option card.
	DO (digital output)	1* Relay output as standard SPST,---- selectable as multi-function output. 1* optional external multi-function output (open collector transistor 24V, 600mA)
	AI (analog input)	Set speed command and PID feedback signal (speed, PID, 4~20mA / 0~10V) or MFIT S7 [MFIT = multi-function input terminal]
	Other functions	Instantaneous power loss restart, Speed search, auto-restart, DC brake, torque boost, 2 / 3wire control and PID control.
Environment	Communication control	<ul style="list-style-type: none"> •RS485 Option card: Modbus RTU/ASCII modes, 4800~38400 bps, max. 254 stations •PC/PDA software
	Operation temperature	-10~50°C (inside enclosure) IP20 ; -10~40□ IP65
	Storage temperature	-20~60°C
	Humidity	0 – 95% RH (non condensing)
	Vibration immunity	1G (9.8m/s ²)
	EMC ※2	Built-in: First Environment, Unrestricted Distribution (Class B). External: First Environment, Restricted Distribution (Class A). In accordance with EN61800-3
	LVD	Conforming to EN50178
	Enclosure	IP20
	Safety Class	UL508C

Protective Functions	Over load protection	Inverter rated current 150%/1min
	International conformity	UL/cUL/CE
	Over-voltage trip	200V Class: DC voltage >400V. 400V Class: DC voltage >800V
	Under-voltage trip	200V Class: DC voltage <190V. 400 Class: DC voltage <380V
	Instantaneous power-loss restart	Set to enable or disable
	Stall prevention	ACC/DEC/ Operation stall prevention and stall prevention level.
	Output terminal short circuit	Electronic circuit protection
	Other faults	Electronic circuit protection
Other function	Over-current, over-voltage, under-voltage, overload, instantaneous power-loss restart, ACC/DEC / RUN stall prevention, output terminal short circuit, grounding error, reverse block, direct start at power on and fault reset limit.	

※1: The setting resolution above 100Hz is 1Hz when set by keypad, and 0.01Hz when set using serial communication from computer (PC) or programmable controller (PLC).

※2: Non-standard, un-filtered *iDrive* model numbers **EDX-020-21** to **EDX-075-21**, and **EDX-075-43** to **EDX-220-43** fitted with optional external filter are in accordance with EN61800-3 First Environment; Restricted Distribution when carrier frequency is set at 10KHz or less.

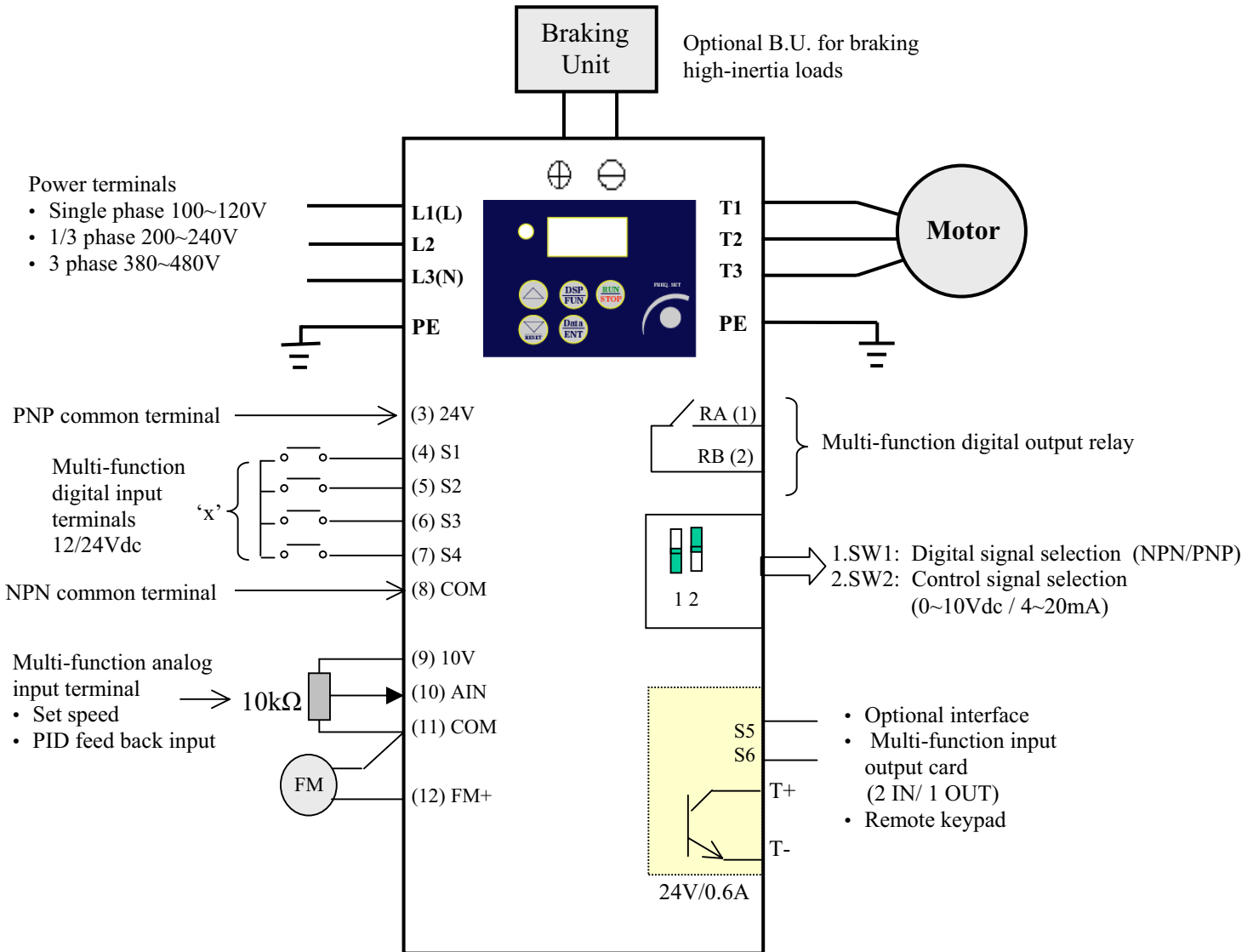
Non-standard, un-filtered *iDrive* model numbers **EDX-150-21** and **EDX-220-21**, fitted with optional external filter are in accordance with EN61800-3 First Environment; Unrestricted Distribution when carrier frequency is set at 10KHz or less.

Standard, filtered *iDrive* model numbers **EDX-020-21-E** to **EDX-075-21-E**, are in accordance with EN61800-3 First Environment; Unrestricted Distribution when carrier frequency is set at 10KHz or less.

Model numbers **EDX-150-21-E** and **EDX-220-21-E** are in accordance with EN61800-3 First Environment; Unrestricted Distribution when carrier frequency is set at 6KHz or less.

IP65 *iDrive* models **EDX-020-21-E-N4(S)** to **EDX-220-21-E-N4(S)** and **EDX-075-43-E-N4(S)** to **EDX-220-43-E-N4(S)** are in accordance with EN61800-3 First Environment; Restricted Distribution when carrier frequency is set at 10KHz or less.

3.5 iDrive EDX connection diagram

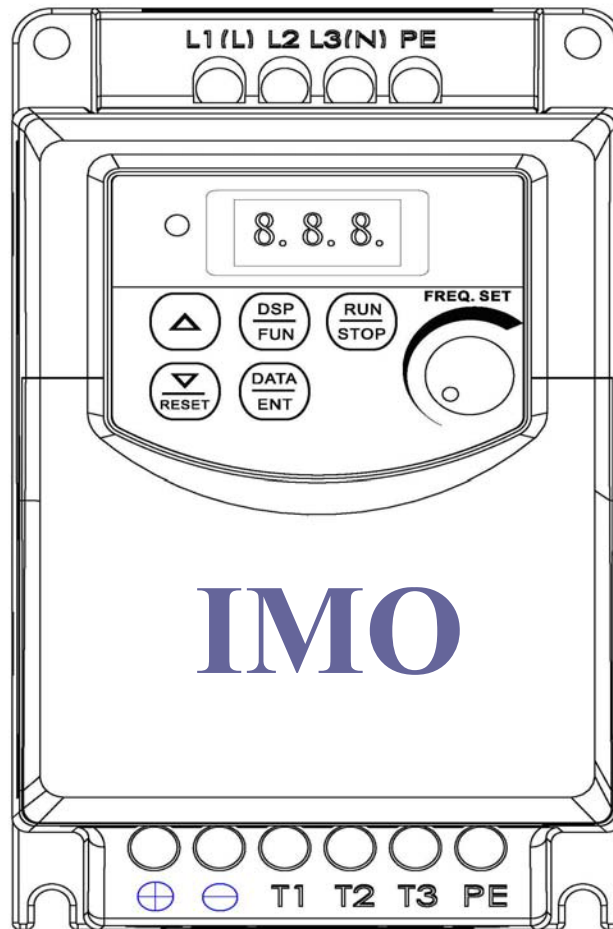


Note 1:- Connect point 'x' to either: -
Terminal 3 (internal +24Vdc) for PNP mode (positive switching) OR...
Terminal 8 (Common 0V) for NPN mode (negative switching).

Note2:- External 24Vdc may be used to supply the external contacts at point 'x'.
If so then connect the 0V of the external supply to Common (terminal 8).

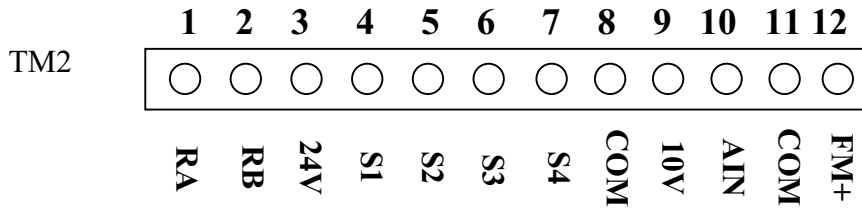
3.6 Description of Inverter Terminal

Descriptions of power terminals



Symbol	Description
L1 (L)	Main power input Single-phase: L/N Three-phase: L1/L2/L3
L2	
L3 (N)	
⊕	DC link and braking unit terminals. Never connect resistors directly to these terminals or damage will occur!
⊖	
T1	Inverter output. Connect appropriate 3-phase AC induction motor to these terminals.
T2	
T3	
PE	Earth / Ground terminals (2 points)

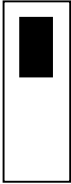

* Brake units are required for applications where a load with high inertia needs to be stopped rapidly. Use a correctly rated braking unit and resistor(s) to dissipate the energy generated by the load during stopping, otherwise inverter will trip on over-voltage.



Control signal terminals block description

Symbol	Description	
RA	Multi-functional output terminals Normally open relay contacts SPST	Rated contact capacity: (250VAC/10A resistive) Contact description: (refer to F21)
RB		
10V	+10Vdc supply for external potentiometer for speed reference.	
AIN	Analog frequency command input terminal or multi-function input terminal S7 (high level: >8V / low level: <2V, (refer to F15 description)	
24V	PNP (SOURCE) input, S1~S4 (S5/S6/S7) common terminal. Set SW1 to 'PNP' position. Connect option card power supply if required.	
COM	NPN (SINK) input, S1~S4 (S5/S6) common terminal. Set SW1 to 'NPN' position. Connect option card power if required. Use this terminal for analogue input and analogue output signals - common.	
FM+	Multi-function +ve analog output terminal, (refer to F26 description). Output signal: 0-10Vdc proportional to F26 setting.	

Symbol	Description
S1	Multi-function input terminals (refer to F11~F14 description)
S2	
S3	
S4	

SW1 and SW2 function description

SW1	Type of external signal	Remarks
	NPN input (SINK)	
	PNP input (SOURCE)	Factory default

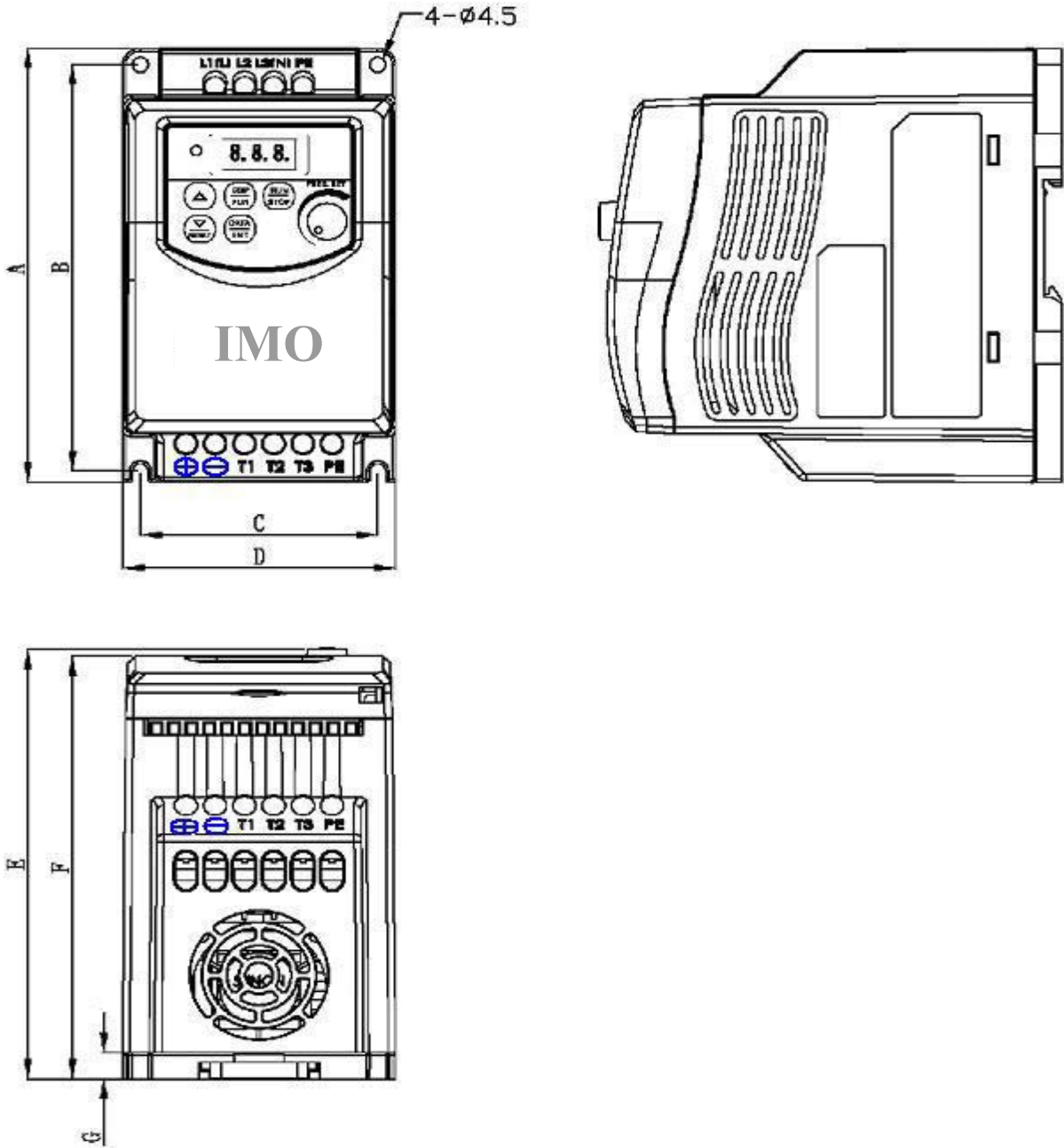
SW2	Type of external signal	Remarks
 V I	0~10Vdc analogue signal	Effective when F05=2 (external analogue input signal from TM2)
 V I	4~20mA analogue signal	

3.7 iDrive Dimensions

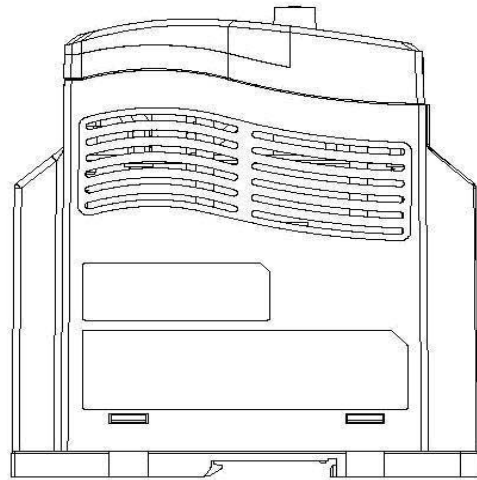
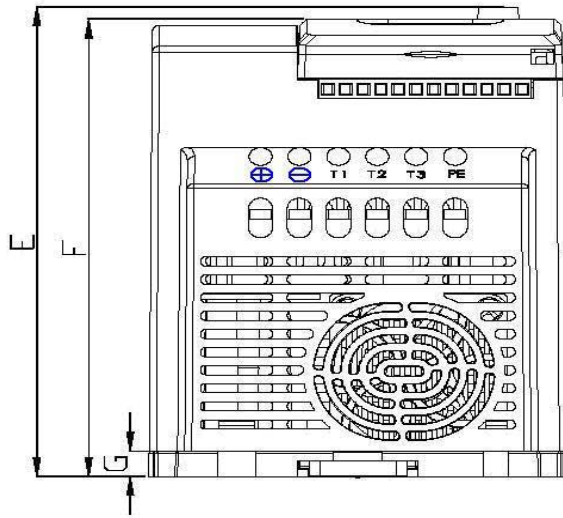
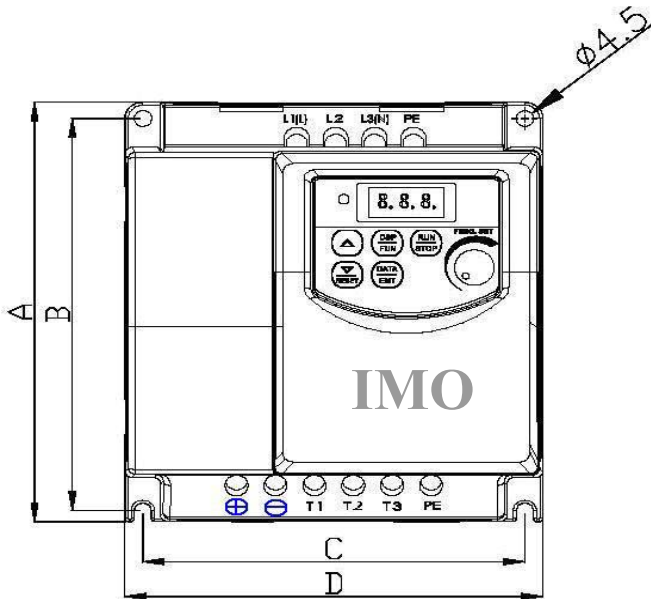
IP20 Frame 1: 1-phase 100V: EDX-020-11 ~ EDX-075-11

1-phase 200V: EDX-020-21 ~ EDX-075-21, EDX-020-21-E ~ EDX-075-21-E

3-phase 200V: EDX-020-23 ~ EDX-075-23



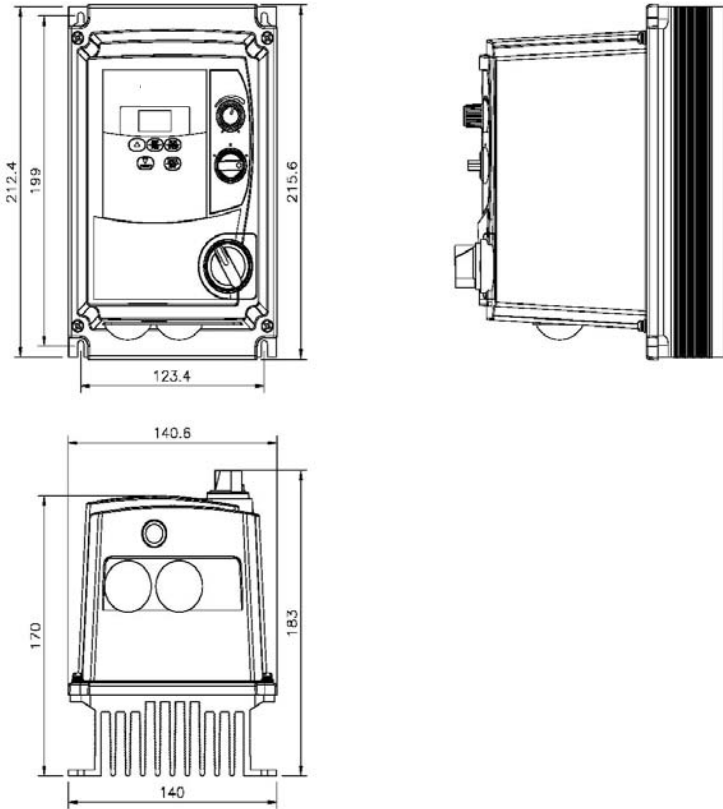
IP20 Frame 2: 1-phase 200V: EDX-150-21 ~ EDX-220-21; EDX-020-21-E ~ EDX-075-21-E
 3-phase 200V: EDX-150-23 ~ EDX-220-23
 3-phase 400V: EDX-075-43 ~ EDX-220-43; EDX-075-43-E ~ EDX-220-43-E



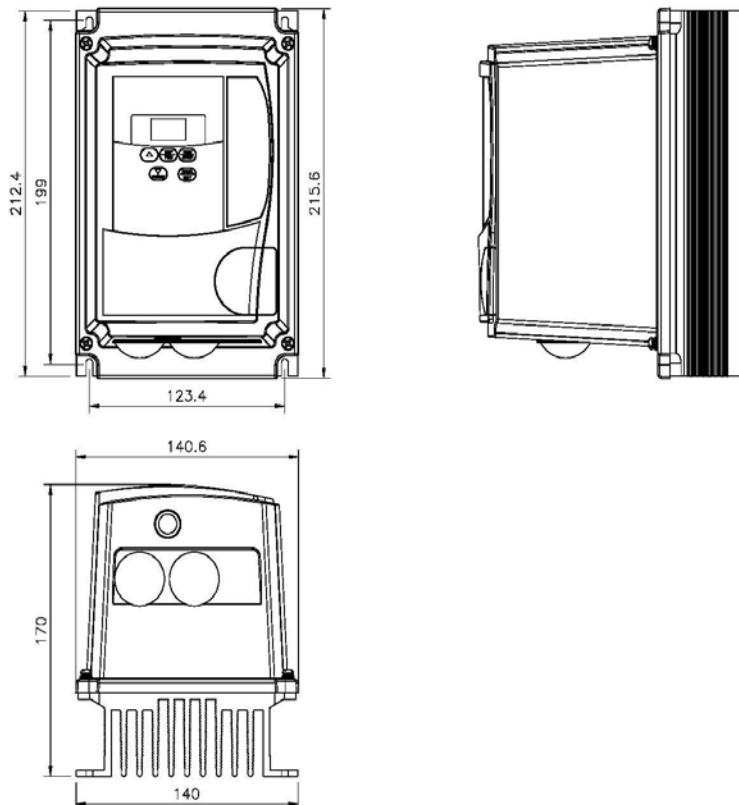
Unit: mm/inch

Frame Size	A	B	C	D
Frame 1	132/5.2	123.5/4.86	67/2.64	77/3.03
Frame 2	132/5.2	123.5/4.86	108/4.25	118/4.65
Dimension	E	F	G	
Frame 1	130.5/5.13	128.45/5.06	8/0.315	
Frame 2	148/5.83	144/5.67	8/0.315	

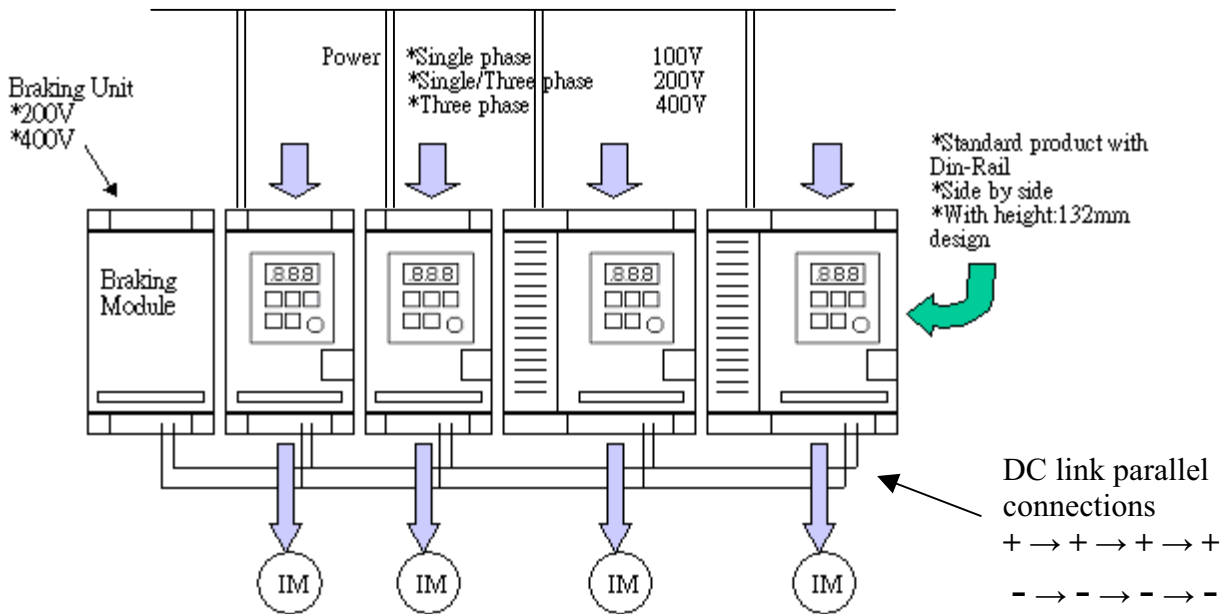
IP65 Frame 1: 1-phase 100V: EDX-020-11-N4S ~ EDX-075-11-N4S (switch type)
 1-phase 200V: EDX-020-21-NS4 ~ EDX-075-21-N4S (switch type)



IP65 Frame 1: 1-phase 100V: EDX-020-11-N4S ~ EDX-075-11-N4S (no switch type)
 1-phase 200V: EDX-020-21-NS4 ~ EDX-075-21-N4S (no switch type)



3.8 Multi-*iDrive* installation with regenerative loads



If all *iDrives* are of the same voltage rating, the DC bus connections of each can be connected together in parallel. Regenerated braking power from stopping of high inertia loads can then be dissipated or partly dissipated between all of the paralleled *iDrives*. If more energy requires dissipating, a braking module and resistors can be connected as shown above.

Note: All drives must power on at the same time.

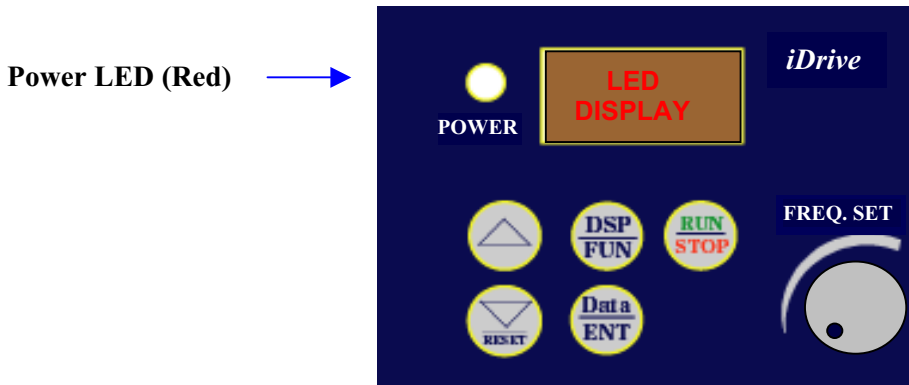
Notes:

- If parallel connecting the DC busses of different capacity inverters;
- Must power up in sequence: Largest capacity first → smallest capacity last.
- DC fuses and/or other precautions may be necessary.
- Never connect ‘+’ terminals to ‘-’ terminals or damage will occur.
- If in doubt consult your local *iDrive* distributor or dealer.

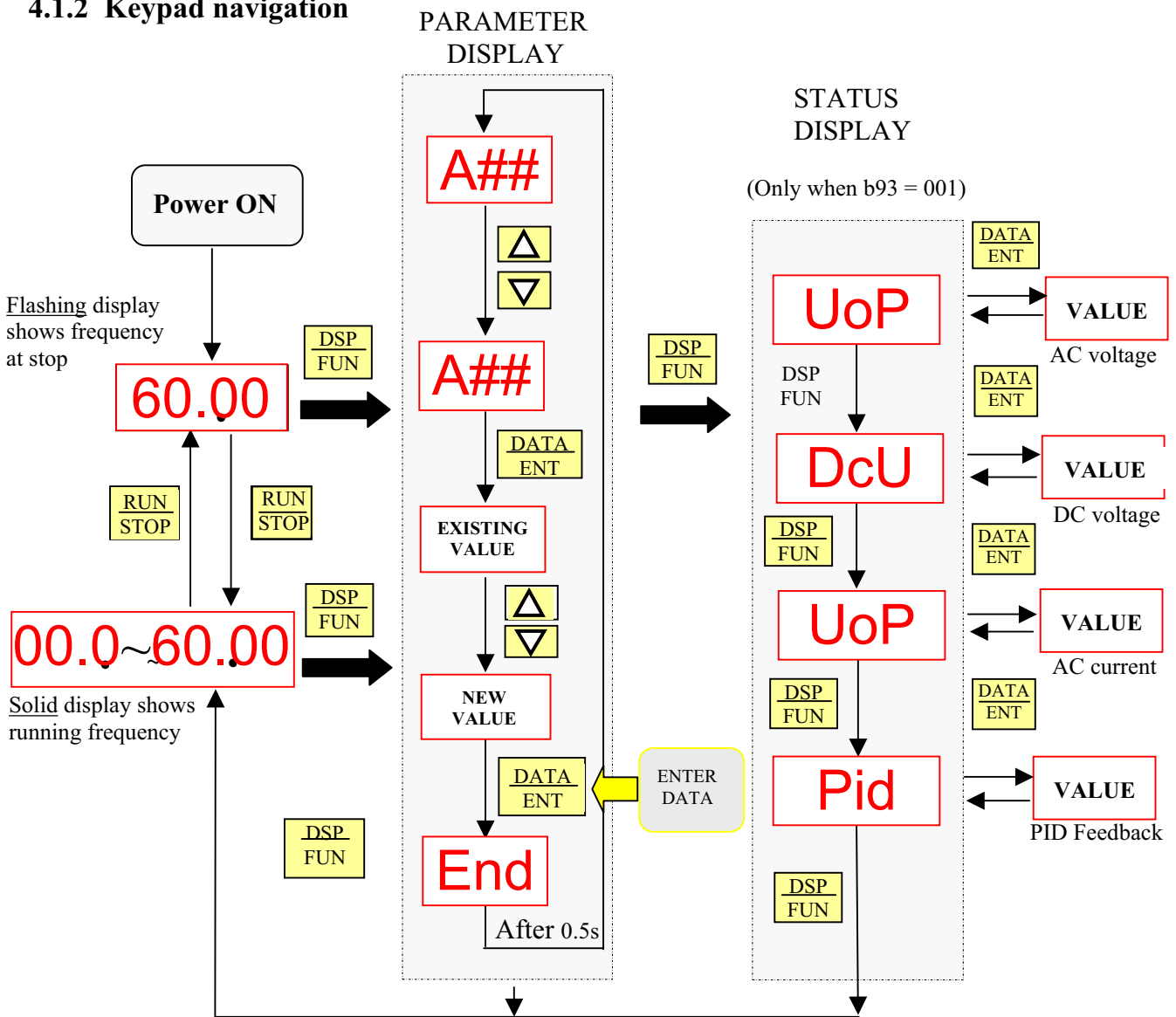
Chapter 4 Programming instructions & Parameter list

4.1 Keypad description

4.1.1 Keypad display and operation instructions



4.1.2 Keypad navigation



*1: Display flashes with set frequency in stop mode, but it is static in run mode.

*2: The frequency can be set during both stop and run.

- **Local / Remote change-over function**

Local mode

Run Command

Set (**A00 = 000**): Run command only from **RUN / STOP** keys on the keypad.

Frequency command

Set (**A01 = 000**): UP/DOWN keys on keypad control the motor frequency (speed).Set (**A01 = 001**): only the 'Freq.Set' potentiometer (VR) on the keypad can control the motor speed.**Remote mode**

Run Command

Set (**A00 = 001**): Run command only by digital input to TM2 terminal S1 to S4.Terminals S1 to S4 can be configured for 'RUN' input by setting functions (**b34 to b38 = 000 / 001**)

Frequency command

Set (**A01 = 002**): only external speed reference to TM2 terminal 10 (AIN) can control the motor speed.Note: Switch SW2 and (**b61 = 000 / 001**) must be set for either 0-10V or 4-20mA input.**Tip!**

Quick changeover between **LOCAL** and **REMOTE** control modes can be made by simultaneously pressing the ▼/RESET and the DATA/ENT keys on keypad. Modes can be 'toggled' by this method.

Note that the motor must be stopped before changeover is allowed.

4.2 Parameter functions

Quick-Start ‘A’ parameter function list

Parameter Number	Function	Range / (Units)	Factory Setting	Notes
A00	Operation control	000: Keypad RUN/STOP keys 001: Terminals 002: RS232/485 Comms	000	
A01	Frequency control	000: Keypad UP/DOWN keys 001: Potentiometer on Keypad 002: AIN signal (TM2) 003: MFIT : Mot. Pot. function 004: RS232/485 Comms	000	
A02	Frequency high limit	01.0 ~ 200 (Hz)	50.0/60.0	*2
A03	Frequency low limit	00.0 ~ 200 (Hz)	00.0	*2
A04	Acceleration time 1	00.1 ~ 999 (s)	05.0	*1, *2
A05	Deceleration time 1	00.1 ~ 999 (s)	05.0	*1, *2
A06	Control mode select	000: Vector control 001: V/F control	001	*4
A07	V/F Pattern set	001 ~ 007	001	
A08	Output voltage at base frequency	198 ~ 264, 380 ~ 528 (V)	220 / 440	
A09	Base frequency	00.2 ~ 200 (Hz)	50.0/60.0	
A10	Torque Boost Gain [V/F]	00.0 ~ 30.0 (%)	00.0	*1
A11	Electronic thermal relay protection for motor (OL1)	000: Enable motor O/L 001: Disable motor O/L	000	
A12	Access to ‘b##’ parameters	000: b-parameters closed 001: b-parameters open	000	

Advanced ‘b’ parameter function list (Access to these parameters by setting A12 = 001)

Parameter Number	Function	Range / (Units)	Factory Setting	Notes
b00	Acceleration time 2	00.1 ~ 999 (s)	05.0	*1, *2
b01	Deceleration time 2	00.1 ~ 999 (s)	05.0	*1, *2
b02	Slip Compensation Gain [V/F]	00.0 ~ 100 (%)	00.0	*1
b03	Motor No-Load Current [V/F]	--- (A)	---	*4
b04	Output Voltage at Max Frequency [V/F]	00.0 ~ 100 (%)	100	
b05	Mid Output Frequency [V/F]	00.1 ~ 200 (Hz)	25.0	
b06	Output Voltage at Mid Frequency [V/F]	00.0 ~ 100 (%)	50.0	
b07	Min Output Frequency [V/F]	00.1 ~ 200 (Hz)	00.5	
b08	Output Voltage at Min Frequency [V/F]	00.0 ~ 100 (%)	01.0	
b09	Motor Rated Current [Vector]	--- (A)	---	*4
b10	Motor Rated Voltage [Vector]	--- (V)	---	*4
b11	Motor Rated (Base) Frequency [Vector]	--- (Hz)	---	*4
b12	Motor Rated Power [Vector]	--- (KW)	---	*4
b13	Motor Rated Speed [Vector]	--- (RPM/10)	---	*4

b14	Torque Boost Gain [Vector]	001 ~ 450 (%)		
b15	Slip Compensation Gain [Vector]	001 ~ 450 (%)		
b16	Low Frequency Dead-Band Voltage Compensation [Vector]	000 ~ 040		
b17	DC Injection Braking Time	00.0 ~ 25.5 (s)	00.5	
b18	DC Injection Braking Start Frequency	01.0 ~ 10.0 (Hz)	01.5	
b19	DC Injection Braking Level	000 ~ 020 (%)	005	
b20	Skip Frequency 1	00.0 ~ 200 (Hz)	00.0	*1
b21	Skip Frequency 2	00.0 ~ 200 (Hz)	00.0	*1
b22	Skip Frequency Bandwidth	00.0 ~ 30.0 (+/-Hz)	00.0	*1
b23	Acceleration Stall Prevention Level	050 ~ 200 (%)	200	
b24	Deceleration Stall Prevention Level	050 ~ 200 (%)	200	
b25	Running Stall Prevention Level	050 ~ 200 (%)	200	
b26	Stall Prevention Deceleration Time	00.1 ~ 999 (s)	03.0	
b27	Acceleration Stall Prevention	000: Enabled 001: Disabled	000	
b28	Deceleration Stall Prevention	000: Enabled 001: Disabled	000	
b29	Running Stall Prevention	000: Enabled 001: Disabled	000	
b30	Stall Prevention Time During Running	000: According to (A05) 001: According to (b26)	000	
b31	Power Loss Auto Re-start	000: Enabled 001: Disabled	001	
b32	Auto Re-start Attempts	000 ~ 005	000	
b33	Auto-Start at Power ON	000: Auto-Start Enabled 001: Auto-Start Disabled	001	
b34	Reset Mode	000: Reset command available if RUN command is OFF 001: Reset command available if RUN is ON or OFF	000	
b35	Terminal S1 Function	000: RUN Forward 001: RUN Reverse	000	
b36	Terminal S2 Function	002: Preset Speed Command 1 003: Preset Speed Command 2 004: Preset Speed Command 3 005: JOG Frequency Command	001	
b37	Terminal S3 Function	006: Emergency STOP (E.S.) 007: Base Block (b.b.) 008: Select Accel 2 / Decel 2 009: Reset	005	
b38	Terminal S4 Function	010: UP Command 011: DOWN Command 012: Control Signal Switch	006	
b39	Terminal S5 Function	013: Communications Mode 014: Accel. / Decel. Prohibit 015: Master / Auxiliary Speed Signal	007	

b40	Terminal S6 Function	016: PID Disabled 017: Analog Frequency Signal Input Terminal AIN	009	
b41	Terminal AIN Function	018: PID feedback signal (AIN)	017	
b42	Frequency UP/DOWN Control (MFIT)	000: UP/DOWN Control ON (Freq. Held at Power OFF) 001: UP/DOWN Control ON (Freq. Reset to 0Hz at OFF) 002: UP/DOWN Control ON (As 000 – UP/DOWN is Available when Output OFF)	000	
b43	S1 ~ S6 Digital Input Scan Time	001 ~ 100 (mS x 8)	010	
b44	Jog Frequency	00.0 ~ 200 (Hz)	05.0	*1
b45	Preset Frequency 1	00.0 ~ 200 (Hz)	05.0	*1
b46	Preset Frequency 2	00.0 ~ 200 (Hz)	05.0	*1
b47	Preset Frequency 3	00.0 ~ 200 (Hz)	10.0	*1
b48	Preset Frequency 4	00.0 ~ 200 (Hz)	20.0	*1
b49	Preset Frequency 5	00.0 ~ 200 (Hz)	30.0	*1
b50	Preset Frequency 6	00.0 ~ 200 (Hz)	40.0	*1
b51	Preset Frequency 7	00.0 ~ 200 (Hz)	50.0	*1
b52	Preset Frequency 8	00.0 ~ 200 (Hz)	60.0	*1
b53	0-10V Analogue Output Select	000: Output Frequency 001: Set Frequency 002: Output Voltage 003: DC Voltage 004: Output Current 005: PID feedback Signal	000	*1
b54	Analogue Output Gain	00.0 ~ 200 (%)	100	*1
b55	Multi-Function Output Relay RY1	000: RUN 001: Frequency Reached (\pm b57) 002: Frequency in Range (b56 \pm b57) 003: Frequency Detected (>b56) 004: Frequency Detected (<b56) 005: Fault 006: Auto Reset / Restart 007: Momentary Power Loss 008: Emergency Stop (E.S.) 009: Base Block (b.b.) 010: Motor Overload 011: Inverter Overload 012: xxx Not Used xxx 013: Power ON 014: Communication Error 015: Output Current (>b58)	000	
b56	Output Frequency Reached Set Value	00.0 ~ 200 (Hz)	00.0	*1
b57	Frequency Detection Range	00.0 ~ 30.0 (\pm Hz)	00.0	*1

b58	Output Current Reached Set Value	000 ~ 100 (%)	000	
b59	Output Current Detection Time	00.0 ~ 25.5 (S)	00.0	
b60	Multi-Function Output Transistor (T+ / T- Option Card)	000: RUN 001: Frequency Reached (± b57) 002: Frequency in Range (b56 ± b57) 003: Frequency Detected (>b56) 004: Frequency Detected (<b56) 005: Fault 006: Auto Reset / Restart 007: Momentary Power Loss 008: Emergency Stop (E.S.) 009: Base Block (b.b.) 010: Motor Overload 011: Inverter Overload 012: xxx Not Used xxx 013: Power ON 014: Communication Error 015: Output Current (>b58)	005	
b61	AIN Signal Select	000: 0-10V 001: 4-20mA	000	
b62	AIN Gain	000 ~ 200 (%)	100	*1
b63	AIN Bias	000 ~ 100 (%)	000	*1
b64	AIN Bias	000: Positive 001: Negative	000	*1
b65	AIN Slope Direction	000: Positive 001: Negative	000	*1
b66	AIN Analogue Input Scan Time	000 ~ 100 (mS x 4)	050	
b67	PID Operation Mode	000: PID Control Disabled 001: PID Bias D Control 002: PID Feedback D Control 003: PID Bias D Reverse Control 004: PID Feedback D Reverse Control	000	
b68	Feedback Gain	0.00 ~ 10 (%)	1.00	*1
b69	P: Proportional Gain	0.00 ~ 10 (%)	01.0	*1
b70	I: Integral Time	00.0 ~ 10 (s)	10.0	*1
b71	D: Differential Time	0.00 ~ 10 (s)	0.00	*1
b72	PID Bias/Offset	000: Positive Direction 001: Negative Direction	000	*1
b73	PID Bias Adjust	000 ~ 109 (%)	000	*1
b74	PID Filter Time	00.0 ~ 02.5 (s)	00.0	*1
b75	PID Sleep Level	00.0 ~ 200 (Hz)	00.0	
b76	PID Sleep On-Delay Time	00.0 ~ 25.5 (s)	00.0	
b77	Serial Communications Address	001 ~ 254	001	*3 *4

b78	Serial Communications Baud Rate	000: 4800 (bps) 001: 9600 002: 19200 003: 38400	003	*3 *4
b79	Stop Bits	000: 1 Bit 001: 2 Bits	000	*3 *4
b80	Parity Bit	000: No Parity 001: Even Parity 002: Odd Parity	000	*3 *4
b81	Data Bits	000: 8 Bits 001: 7 Bits	000	*3 *4
b82	Communication Error Detection Time	00.0 ~ 25.5 (s)	00.0	*3
b83	Communication Error Response	000: Decelerate to Stop (A05) 001: Coast to Stop 002: Decelerate to Stop (b01) 003: Continue to Run	000	*3
b84	Remote Keypad Frequency Control From	000: UP/DOWN Keys 001: Potentiometer (VR)	000	
b85	Remote Keypad Broken Cable Response	000: No Response 001: Motor Stop as set by b92 002: No Stop, Runs at Set Freq	000	
b86	Carrier Frequency	004 ~ 016 (kHz)	010	
b87	Inverter Cooling Fan	000: Auto Run by Inverter °C 001: Run When Output On 002: Always Run 003: Always Stop	001	IP20 Only.
b88	Motor Rotation Direction	000: Forward 001: Reverse	000	*1
b89	Inverter Power Code (Read Only)	See following description		
b90	RUN / STOP / Direction Switching	000: FWD/STOP-REV/STOP 001: RUN/STOP-FWD/REV 002: 3-Wire – RUN/STOP	000	
b91	Reverse RUN Instruction	000: Reverse Enabled 001: Reverse Disabled	000	
b92	STOP Method	000: Decelerate to STOP 001: Coast to STOP	000	
b93	Operation Monitor	000: Display Hz Only 001: Display Hz, A, V, PID, etc	000	
b94	Copy Module	000: Module Disabled 001: Copy <i>iDrive</i> to Module 002: Copy Module to <i>iDrive</i> 003: Read / Write Check	000	*3
b95	All Data Reset to Factory Settings	010: Reset to Default (50Hz) 020: Reset to Default (60Hz)	000	
b96	Software Version (Read Only)	CPU Version		*3 *4
b97	Alarm Log	Last 3 fault records		*3 *4

Note: *1: Parameter value can be modified when *iDrive* output is on (motor running).

***2: Frequency resolution is 1Hz for settings above 100 Hz.**

***3: Cannot be modified during communication.**

***4: Do not change while making factory setting.**

b95 factory setting is 010 (50Hz) and motor parameter value is 140.

b95 factory setting is 020 (60Hz) and motor parameter value is 170.

4.3 Parameter Function Description

Basic 'A' parameter functions

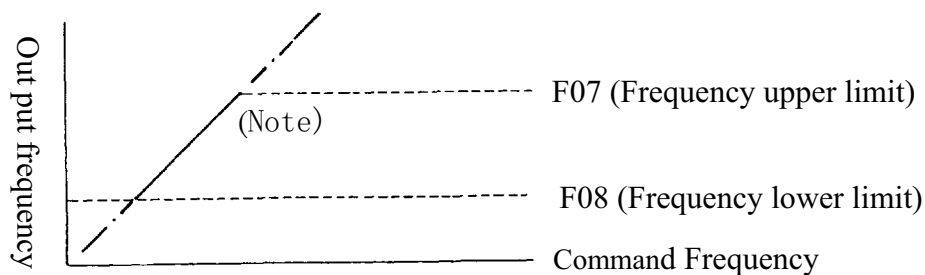
A00 Operation Control (Run Command)	000: Keypad 001: External Terminal 002: Communication Control
--	--

- 1.) A00 = 000, inverter RUN/STOP command is from keypad.
- 2.) A00 = 001, inverter RUN/STOP command is from external terminals.
- 3.) A00 = 002, inverter RUN/STOP command by serial communication.

A01 Frequency Control (Speed Reference Source)	000: UP/Down keys on keypad 001: VR on keypad (Potentiometer) 002: TM2 input signal 003: Multi-function input terminal UP/DOWN function 004: Frequency set by serial communication (When b85 = 1: Remote keypad has priority)
---	--

- 1.) A01 = 001, when one of parameter group b35 ~ b38, or b41 is set to 015 and multi-function input terminal is OFF, the frequency is set by VR on keypad. If the multi-function input terminal is ON, the frequency is set by analog signal (auxiliary speed) from TM2.
- 2.) A01 = 002, when one of parameter group b35 ~ b38, or b41 is set to 015 and multi-function input terminal is OFF, the frequency is set by analog signal (auxiliary speed) from TM2. If the multi-function input terminal ON, the frequency is set by VR on keypad.
- 3.) Up/Down terminal: please refer to description of parameter group F11~ F15 (multi-function input terminal).
- 4.) Priority of reading frequency command: Jog > preset frequency > (Keypad▲▼ or TM2 UP/Down or communication)

A02 Frequency upper limit (Hz) : 01.0 - 200
A03 Frequency lower limit (Hz): 00.0 - 200



Note: If A02 = 0 Hz and frequency command = 0Hz, the inverter will zero-speed stop.

If A03 > 0 Hz and frequency command = 0 Hz inverter output will be at A03 set value.

A04 Acceleration time 1 (s): 00.1 – 999**A05 Deceleration time 1 (s): 00.1 – 999**

Formula for acceleration/deceleration time:

Denominator is based on factory setting in Sensorless vector control

a) Motor rated frequency (Sensorless vector control).

b) Max output frequency (V/F mode).

a)

$$\text{Acceleration time} = A04 \times \frac{\text{Set frequency}}{b11 \text{ (rated frequency)}} \quad \text{Deceleration time} = A05 \times \frac{\text{Set frequency}}{b11 \text{ (rated frequency)}} \rightarrow \text{vector}$$

b)

$$\text{Acceleration time} = F01 \times \frac{\text{Set frequency}}{A09 \text{ (Max output frequency)}} \quad \text{Deceleration time} = F02 \times \frac{\text{Set frequency}}{A09 \text{ (Max output frequency)}} \rightarrow \text{V/F}$$

A06: Control mode**Vector control or V/F control**

A06 = 000: Inverter operates in vector mode. Dynamic response to changing load is improved, motor starting torque increased and low-speed operation is more stable. For good vector control it is also necessary to input correct values into parameters A08, A09, b09 – b16.

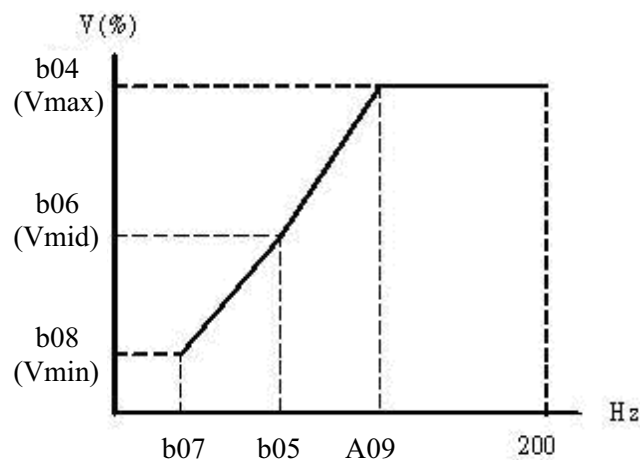
A06 = 001: Inverter operates in V/F mode. Standard performance for fans, pumps, and other non-demanding loads.

A07: Preset V/F patterns = 1 – 7

A07 = 007.

Selects user configurable V/F pattern by setting parameters A09, b04 – b08.

Care should be taken when using this feature as incorrect setting of these parameters may cause motor over-heating or incorrect operation.

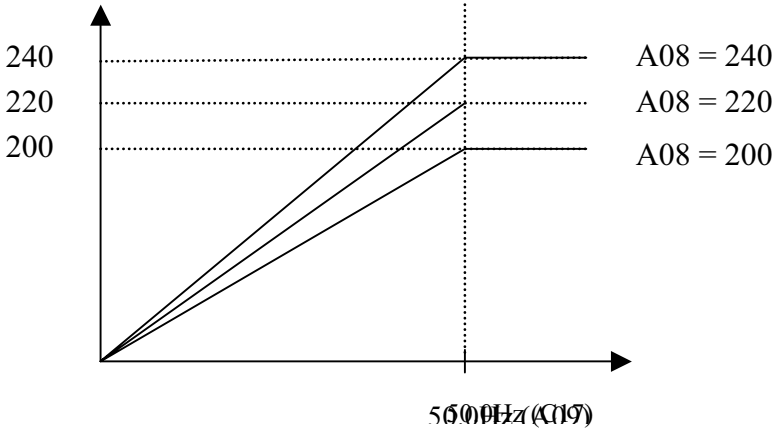


A07 = 001 – 006 fixed V/F pattern (refer to following table).

Spec	Purpose	A07	V/F Pattern	Spec	Purpose	A07	V/F Pattern
50 Hz System	General	001		60 Hz System	General	004	
	High start torque	002			High start torque	005	
	Variable torque	003			Variable torque	006	

A08 VF base voltage set
A09 VF base frequency set

In example below: A09 = 50Hz, b04 =100%
 If A08 setting is 200~240V, then output voltage for the pattern:



The inverter output voltage cannot exceed the input voltage.

A10 Torque Boost Gain (V/F) (%) 00.0 – 30.0%

A11 Electronic thermal overload protection for motor (OL1) :	000: Protection Enabled 001: Protection Disabled
---	---

A12 Advanced parameter functions display	000: Disable access to advanced parameters (b parameters) 001: Enable access to advanced parameters (b parameters)
---	---

A12 = 000. Parameter group b cannot be displayed or accessed.
 A12 = 001. Enable display and access parameter group b.

Advanced ‘b’ parameters functions

b00 Acceleration time 2 (s): 00.1 – 999
b01 Deceleration time 2 (s): 00.1 – 999

b02 Slip Compensation Gain (V/F) (%) 00.0 – 100%

b03 Motor no-load current (A)

Motor no-load current differs with inverter capacity b89. Adjust according motor information.

b04: Output voltage ratio at max. frequency (%)	00.0 – 100%
b05: Mid frequency (Hz)	00.1 – 200Hz
b06: Output voltage ratio at mid. frequency (%)	00.0 – 100%
b07: Min. output frequency (Hz)	00.1 – 200Hz
b08: Output voltage ratio at min. frequency (%)	00.0 – 100%

b04~b08 please refer to A07 description

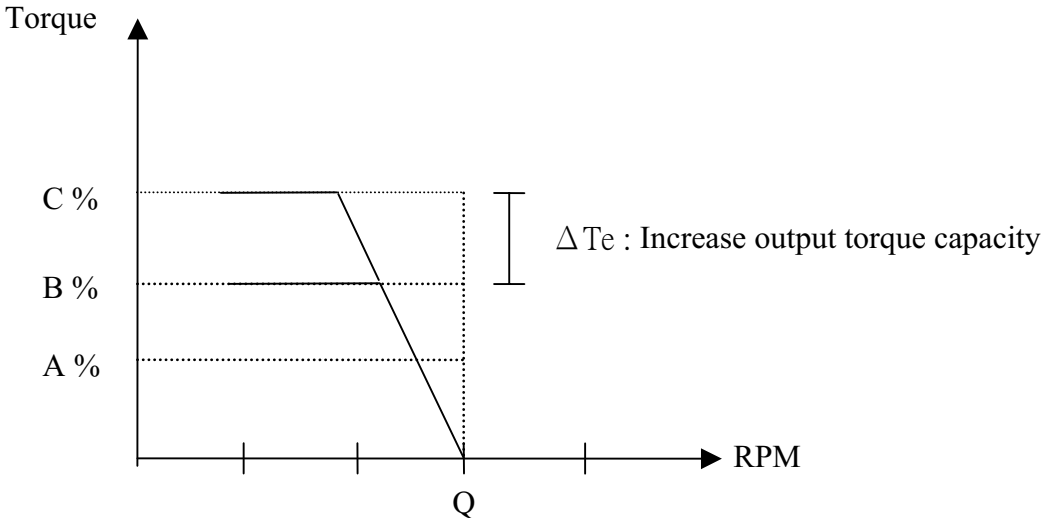
b09 Motor rated current (A)
b10 Motor rated voltage (Vac)
b11 Motor rated base frequency (Hz)
b12 Motor rated power (KW)
b13 Motor rated speed (RPM)

b14 Torque Boost Gain (Only for vector control, A06 = 000)

If motor load torque increases, this function increases the available output torque to match the load.

$$\Delta Te = \underset{\text{(load current)}}{I} \times \underset{\text{(torque boost)}}{\text{Gain}}$$

- Torque/Speed curve pattern:



- Operating frequency range: 0 ~ Motor rated frequency

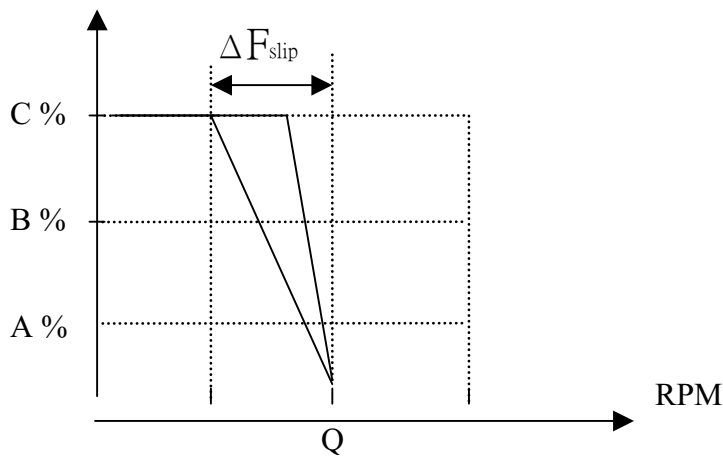
- When the motor output torque is not enough, increase b14 set value.
- If the motor vibrates or becomes very hot decrease b14 set value.
- If running at low speeds for long periods, high b14 set value can cause the motor to overheat
- The maximum output torque limit is proportional to the inverter rated current.
- If increasing b14 set value causes the output current to be too large, increase b03 set value.

b15 Slip Compensation Gain (Only for vector control, A06 = 000)

If the detected motor load is too large, speed will drop. Increase gain b15 to compensate.

$$\Delta F_{\text{slip}} = \underset{\text{(load current)}}{I} \times \underset{\text{(slip compensation)}}{\text{Gain}}$$

- Torque/Speed curve pattern:

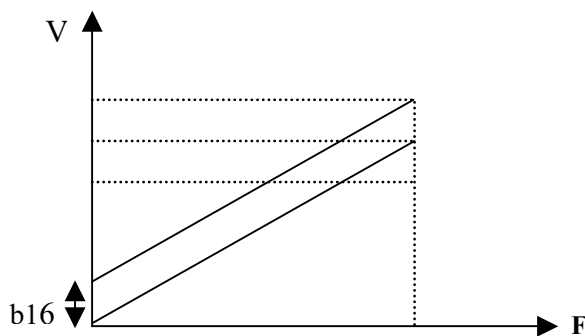


- Operating frequency range: 0 ~ motor rated frequency.
- When the motor load is high, speed will decrease (slip). Increase b15 set value to compensate.
- If the motor vibrates or becomes very hot decrease b14 set value.
- The maximum rotational output speed limit is fixed by the motor maximum set frequency.

b16 Low Frequency DB Voltage Compensation (Only for Vector control, A06 = 000)

Increasing b16 set value will increase output voltage and low frequency torque.

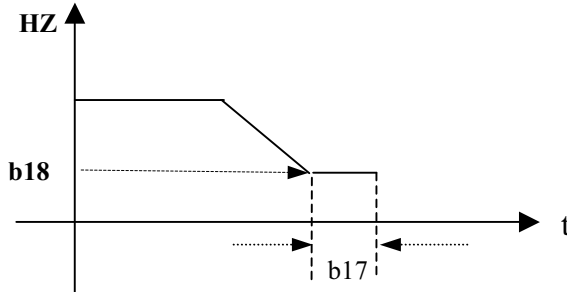
- Output voltage/frequency pattern:



- Operating frequency range: 0~10HZ / 50HZ
0~12HZ / 60HZ
- At low operating frequency: -
When the motor output torque is not enough increase b16 set value.

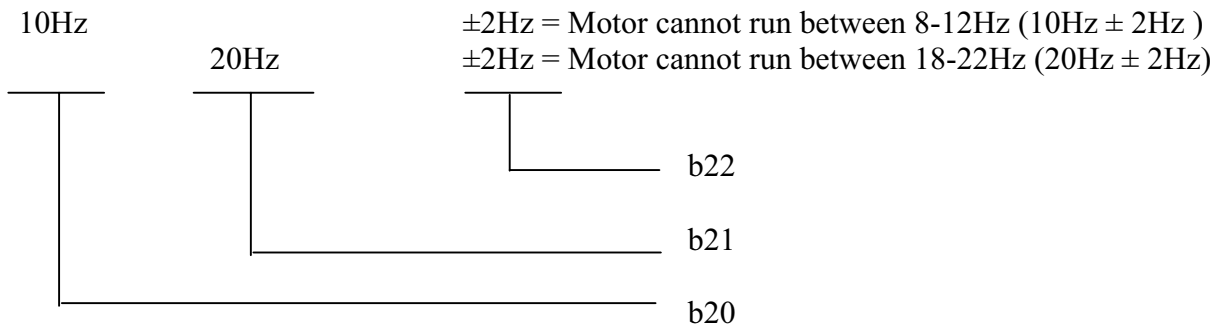
b17 DC braking time (s) 00.0~25.5
b18 DC braking start frequency (Hz) 01.0~10.0
b19 DC braking level (%) 00.0~20.0%

b17 / b18: DC braking time and start frequency, as following figure:



b20 Skip Frequency 1 (Hz) : 00.0 – 200
b21 Skip Frequency 2 (Hz) : 00.0 – 200
b22 Skip Frequency Hysteresis (\pm Hz) : 00.0 – 30.0

Example: When b20 = 10.0Hz
 b21 = 20.0Hz
 b22 = 02.0Hz



b23 Acceleration stall-prevention level: 050% ~ 200%
b24 Deceleration stall-prevention level: 050% ~ 200%
b25 Run stall-prevention level: 050% ~ 200%
b26 Stall prevention deceleration time: 00.1 ~ 999s
b27 Acceleration stall-prevention:
 = 000: Enable Stall prevention during acceleration.
 = 001: Disable Stall prevention during acceleration.
b28 Deceleration stall-prevention:
 = 000: Enable Stall prevention during deceleration.
 = 001: Disable Stall prevention during deceleration.
b29 Run stall-prevention:
 = 000: Enable Stall prevention in Run mode.
 = 001: Disable Stall prevention in Run mode.
b30 Stall prevention time during run mode.
 = 000: according to A05 (Deceleration Time 1).
 = 001: according to b26.

- 1.) When the acceleration time is set too short the **iDrive** could trip on Over-Current (OC).
If the time accelerating time cannot be increased use stall-prevention. A stall-prevention level needs to be programmed and when the inverter detects this level it freezes the acceleration ramp until the current falls below the set level, then continues accelerating.
- 2.) When the Deceleration time is set too short the **iDrive** could trip on Over-Voltage (OU).
If the time deceleration time cannot be increased then stall-prevention can be used. A stall-prevention level has to be programmed and when the inverter detects this level it holds the deceleration ramp until the DC link voltage falls below the factory set level, then continues decelerating.
- 3.) The **iDrive** could stall during run mode due to an impact load or sudden changes of the load. Stall prevention in run mode will detect a programmed stall level (b25) for a period of time (b30) , if the level exceeds b25 , then the **iDrive** reduces its output frequency (speed) to provide the required additional torque to overcome the stall condition. Once this level is below the programmed stall level then it ramps up to its normal running speed.

b31 Auto restart on momentary power loss. 000: Enabled
001: Disabled

b31 = 000: Auto restart after a momentary power loss is enabled on resumption of power and application of run signal, according to setting of parameter A00.

The Inverter will carry out an auto speed search, once the motor speed and direction is found then it will accelerate to the running speed prior to the power loss.

b31 = 001: Auto restart disabled.

b32 Auto restart times: 000 ~ 005

1.) b32 = 000: The inverter will not auto-restart on fault trip.

2.) b32 > 000

The Inverter will carry out an auto-speed search 0.5 sec after the fault trip, while the inverter output is switched off and the motor is coasting to stop.

Once the rotating speed is determined the inverter will accelerate or decelerate from this speed to the running speed before the fault.

3.) Auto restart will not occur following OL1, OL2, OH, or BB alarms.

Note:- Auto restart will not function while DC injection braking or decelerating to stop.

b33 Auto-start on power up

001: Disable direct start on power up.

⚠ Danger:

1.) When b33 = 000 and external run mode (A00 = 001) are selected and a RUN command is present, the inverter will auto-start when power is supplied to the inverter.

This feature should only be considered when all safety implications of its use have been investigate, risk assessment for maintenance, use of warning labels etc.

2.) When b33 = 001 and external run mode (A00 = 001) are selected, and a RUN command is present, the inverter will not auto-start when power is supplied to the inverter. The inverter display will flash and SP1' error message. It can only restart after the RUN command has been removed then reapplied.

b34 Reset mode	000: Reset is enabled only when a RUN command is OFF. 001: Reset is enabled when a RUN command is OFF or ON.
-----------------------	---

b34 = 000. Fault cannot be reset therefore *iDrive* cannot start if a RUN command is ON (A00=001)

b35 ~ b38, b41	Selectable Functions for input terminals (S1 - S4 & AIN) 000: Run Forward 001: Run Reverse 002: Preset Speed Command 1 003: Preset Speed Command 2 004: Preset Speed Command 3 005: Jog frequency Command 006: Emergency stop (E.S.) 007: Base Block (b.b.) 008: Switching to 2nd acceleration / deceleration time 009: Reset 010: Up command 011: Down command 012: Control signal switch 013: Communication mode. Disable – Enable. 014: Acceleration / deceleration prohibit 015: Master / Auxiliary speed switch 016: PID function prohibit 017: Analog frequency signal input (terminal AIN) 018: PID feedback signal (terminal AIN)
-----------------------	---

- 1.) S1-S5 and AIN on TM2 are multi-function i/p terminals. Set to any of the settings shown above.
- 2.) Parameters b35~b38, and b41 control the function of each terminal as shown below:
b35 controls terminal S1, b36 controls terminal S2, b37 controls terminal S3, etc

b35 ~ b38 (or b41) = 000/001 (Forward/ Reverse)

Forward command ON means motor will run forward, when OFF, the motor stops. b35 factory default is forward command.

Reverse command ON means motor will run in reverse, when OFF, the motor stops. b36 factory default is reverse command.

If forward and reverse commands are ON simultaneously the motor will stop.

b35 ~ b38 (or b41) = 002~004 (Preset Speed Command 1~3)

When a run signal is applied and the selected external multi-function input terminal is on, the inverter will run at one of 8 preset speeds, which are controlled by the status of the terminals. The corresponding speeds are as that programmed in parameters b44 to b52 as shown in the table below.

b35 ~ b38 (or b41) = 005 (Jog Frequency Command)

When run signal is applied and the selected external multi-function input terminal is on and set to Jog speed, the inverter will run according to b44.

Priority: Jog > Preset Speed

Preset Speed Command 3 Set value = 004	Preset Speed Command 2 Set value = 003	Preset Speed Command 1 Set value = 002	Jog Frequency Command Set value = 005	Output frequency set value
X	X	X	1	b44
0	0	0	0	b45
0	0	1	0	b46
0	1	0	0	b47
0	1	1	0	b48
1	0	0	0	b49
1	0	1	0	b50
1	1	0	0	b51
1	1	1	0	b52

b35 ~ b38 (or b41) = 006: Emergency Stop (E.S)

The inverter will decelerate to stop on receiving the external emergency stop signal.

The display will be flashing 'E.S.'

The inverter will only start again when the Emergency Stop signal is removed and the start signal is turned off and then on again (remote start mode) or the Run key is pressed in (keypad mode).

Removing the Emergency Stop signal before the inverter has fully stopped will not inhibit the Emergency Stop operation.

Output relay can be set to Emergency Stop fault by setting b55 = 008

b35 ~ b38 (or b41) = 007: Base Block (b.b.)

The inverter will stop immediately on receiving Base Block signal regardless of setting of b92 and display flashes 'b.b.' The inverter auto restarts at speed search when b.b. is signal removed.

b35 ~ b38 (or b41) = 008: Switching to Acceleration time 2 / Deceleration time 2

When terminal is ON the 2nd acceleration / deceleration ramps are selected.

b35 ~ b38 (or b41) = 009: Reset command

Reset command ON. The inverter will be disabled. Resettable faults will be cleared.

b35 ~ b38 (or b41) = 010 / 011: UP / DOWN function: (According to acceleration/deceleration time)

Set A01 = 003, to enable UP/DOWN function. The UP/DOWN key on Keypad is unavailable for changing frequency directly in this mode.

Set b42 = 000, When an UP/DOWN signal is ON, the motor accelerates / decelerates to a frequency and stops accelerating / decelerating when the UP/ DOWN signal is removed. The motor will continue at this speed until another command is given.

The inverter will decelerate to stop or free run to stop when the run command is OFF according to b92. The speed at which the inverter stops will be stored in b45.

In this mode the UP/DOWN key is unavailable for modifying frequency. Use b45 to modify.

Set b42 = 001, The inverter will run from 0Hz on receiving run command.

UP/DOWN action is similar to above description. When the run command is removed, the motor will decelerate to stop or free run to stop (0 Hz) according to setting of b92.

The inverter will output from 0Hz in next operation.

Note: UP/ DOWN commands are disabled if both terminals are ON at the same time.

b35 ~ b38 (or b41) = 012: Control Signal Switch

Terminal OFF: Operation signal / frequency reference signal is controlled by A00/A01.

Terminal ON: Operation signal / frequency signal is controlled by keypad (not controlled by A00/A01).

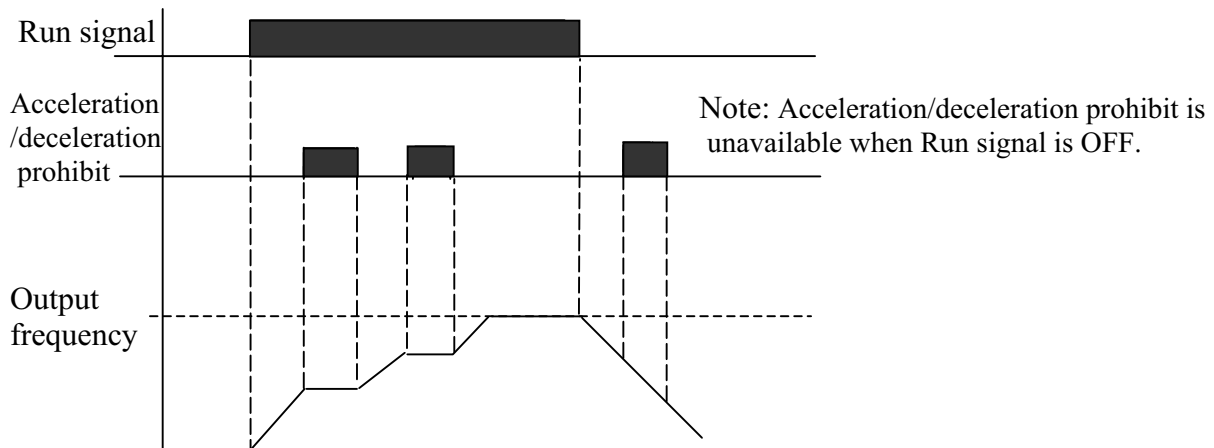
b35 ~ b38 (or b41) = 013: Communication Mode Select.

Terminal OFF: In communication mode, the inverter is controlled by master (PC or PLC) run and frequency signals and also allowed to modify parameters. The keypad and TM2 run/frequency signal is not available at this time. The keypad is only available for displaying voltage / current / frequency and parameters can be read but not modified. Emergency stop available.

Terminal ON: PC/PLC can read and modify parameters. Note that ALL operating controls are from keypad. (Not effected by setting of A00 & A01)..

b35 ~ b38 (or b41) = 014: Acceleration/deceleration disable.

When external control terminal ON, the inverter will stop accelerating/ decelerating until the signal is released. The motion is as follows:

**b35 ~ b38 (or b41) = 015 Master/Auxiliary speed switch**

1) A01 = 001: When one of the parameters b35 ~ b38 (or b41) is set to 015, and terminal is OFF, the frequency is set by the VR on the Keypad (Master speed).

When multi-function input terminal is ON, the frequency is set by the analog signal on TM2 (Auxiliary speed AIN).

2.) A01 = 002: When one of the parameters b35 ~ b38 (or b41) is set to 015, and terminal is OFF, the frequency is set by the analog signal on TM2, (Master Auxiliary speed AIN).

When terminal is ON, the frequency is set by the VR on the Keypad (Auxiliary speed).

b35 ~ b38 (or b41) = 016 (PID function Disable)

When input terminal is ON, PID functions set by b67 are disabled.

When input terminal is OFF, PID functions are enabled.

b41 = 017 Analog frequency signal input (Terminal AIN)

Frequency reference is set by 0-10Vdc or 4-20mA on terminal AIN, set by b61 and SW2.

b41 = 018 PID Feedback signal input (Terminal AIN)

PID feedback can be connected to AIN terminal 0-10Vdc/0~20mA or 2~10V/4-20mA as set by b61 and SW2.

b39 / b40 (option card) S5 / S6 terminal MFIT Setting

- 000: Run Forward**
- 001: Run Reverse**
- 002: Preset Speed Command 1**
- 003: Preset Speed Command 2**
- 004: Preset Speed Command 3**
- 005: Jog Frequency Command**
- 006: Emergency Stop (E.S.)**
- 007: Base Block (b.b.)**
- 008: Switching to 2nd acceleration/ deceleration time.**
- 009: Reset**
- 010: Up Command**
- 011: Down Command**
- 012: Control signal switch**
- 013: Communication control signal switch**
- 014: Acceleration/ deceleration disable**
- 015: Master/ auxiliary speed switch**
- 016: PID function disable**

Refer to b35 ~ b38

b42 Frequency UP / DOWN control (Motorized pot):

- 000 : Set frequency by this function will be stored when the inverter stops.
UP/DOWN function is not available in stop mode.**
- 001 : Set frequency will be reset to 0Hz when the inverter stops.**
- 002 : Set frequency will be stored when the inverter stops.
UP/DOWN function is available in stop mode.**

- 1) **b42 = 000**, when a RUN command is ON, the inverter will accelerate to b45 then maintain running at this set speed. When UP/DOWN terminal is ON, the inverter begins to accelerate/decelerate until the signal goes OFF then it runs at this new speed etc.

When the RUN goes OFF, the inverter decelerates or coasts to stop according to the setting of b92. The frequency at which the RUN signal is OFF will be stored in b45.

The UP/DOWN Key is not available at stop. The stored frequency cannot be changed by UP/DOWN terminal, but can by changing the value of b45.

- 2) **b42 = 001**, the inverter will run from 0 Hz when run signal is applied. UP/DOWN operation method is same as b45 = 000, but when next RUN signal is ON, inverter will start from 0Hz.
- 3) **b42 = 002**. Same as when b45 = 001 but UP/DOWN is available while in stop mode.

b43: Multi-function input terminal S1~S6 signal scan time (N. mS × 8), N = (1~100 times).

b66: AIN signal scan time (N. mS × 8), N = (1~100 times).

- 1.) If b43 scan time is set to say 80 mS (i.e N = 10) then digital input signals on for less than 80mS will be ignored.
- 2.) If the CPU scans the same input signal for N times (scan times), it is accepted as normal. If it is less than N times, it will be taken as noise. One scan time: 8ms.
- 3.) User can increase scan time to counteract electromagnetic noise in the operating environment. Increasing b43/b66 will reduce the inverter response time.

b44 – b52 Keypad, Jog and Preset Frequency setting

Note 1: - Frequency selection will be made according to status of terminals S1-S4 & AIN and setting of parameters b35-b38 and b41 as required.

Note2:- Selected preset frequency values should be programmed into parameters b44 – b52 as required.

1) **b35 ~ b38, and b41 = 002 - 004 (Preset Frequency Command 1~3)**

When a run command is applied and any of the selected multi-function input terminals are ON, the motor will run at the preset frequency according to the table below.

2) **b35 ~ b38, and b41 = 005 (Jog Frequency Command)**

External input terminal is set to Jog operation. When terminal is ON, the motor will run at the Jog frequency according to the table below.

Parameter	Description	Frequency range	Factory default
b45	Preset frequency 1 (Hz)	00.0 - 200	05.0
b46	Preset frequency 2 (Hz)	00.0 - 200	05.0
b47	Preset frequency 3 (Hz)	00.0 - 200	10.0
b48	Preset frequency 4 (Hz)	00.0 - 200	20.0
b49	Preset frequency 5 (Hz)	00.0 - 200	30.0
b50	Preset frequency 6 (Hz)	00.0 - 200	40.0
b51	Preset frequency 7 (Hz)	00.0 - 200	50.0
b52	Preset frequency 8 (Hz)	00.0 - 200	60.0
b44	Jog frequency (Hz)	00.0 - 200	05.0

b53 Multi-function analog output:

Multi-function analog output signal select:-

001: Setting / command frequency

002: Output frequency

003: DC link voltage

004: Output current

005: PID feedback signal

b54 Multi-function analog output gain = 000 ~ 200%

0-10 Vdc is output from multi-function analog output terminal FM+.

Output can be set to correspond to any of the above values.

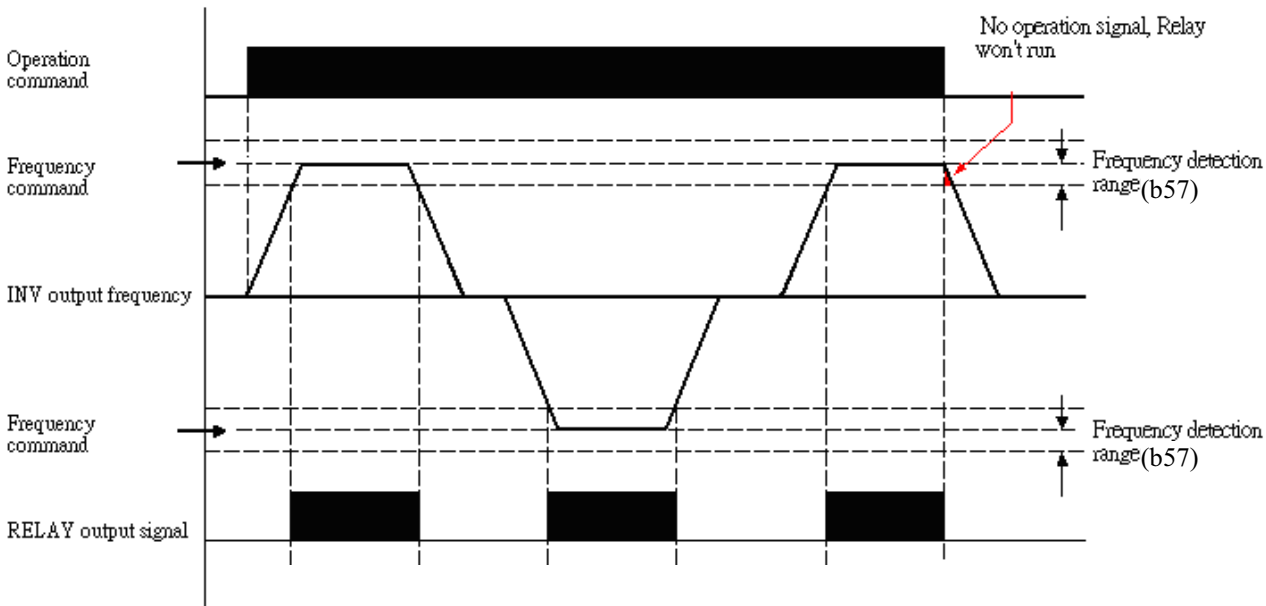
b54 is used to scale the output signal supplied to an externally connected analog device.

b53 = 005, PID Feedback. The analog input to terminal AIN (0-10Vdc or 4-20mA), will be output from terminal FM+ as 0-10Vdc.

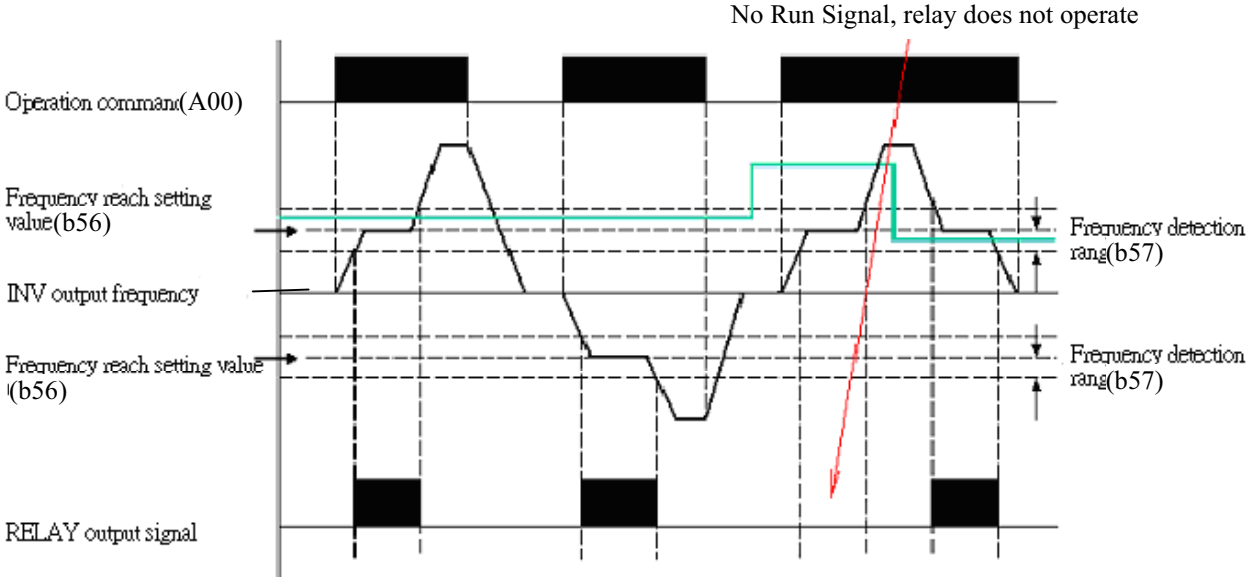
Note: Due to hardware limits, the max output voltage from FM+ terminal is limited to 10V.

- b55 Multi-function output RY1**
 - 000: Inverter output on - RUN**
 - 001: Frequency reached (Preset target frequency \pm b57)**
 - 002: Frequency reached (Preset output frequency level (b56) \pm b57)**
 - 003: Frequency Detection ($>$ b56)**
 - 004: Frequency Detection ($<$ b57)**
 - 005: Fault output**
 - 006: Auto restart**
 - 007: Momentary power loss**
 - 008: Emergency Stop (E.S.)**
 - 009: Base Block (b.b.)**
 - 010: Motor overload protection**
 - 011: Inverter overload protection**
 - 012: xxx Not used xxx**
 - 013: Power On**
 - 014: Communication error**
 - 015: Output current detection**
- b56 Preset Output frequency reached = 00.0 ~ 200Hz**
- b57 Frequency detection range = 00.0 ~ 30Hz**

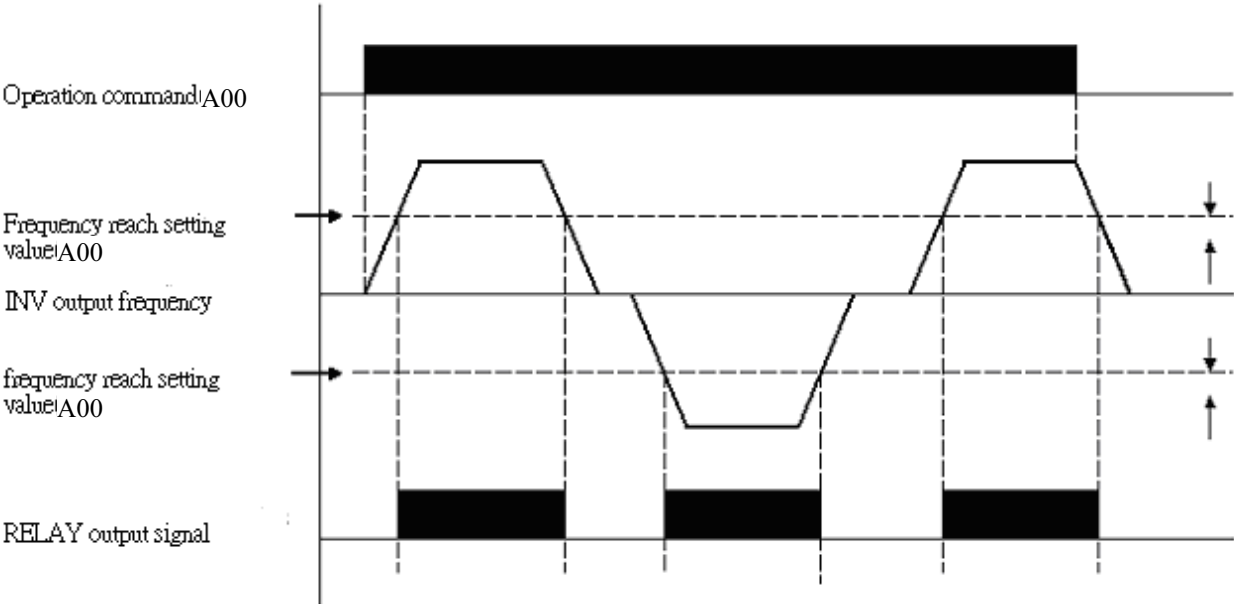
b55 / b60 = 001: Reach frequency : Target frequency \pm b57



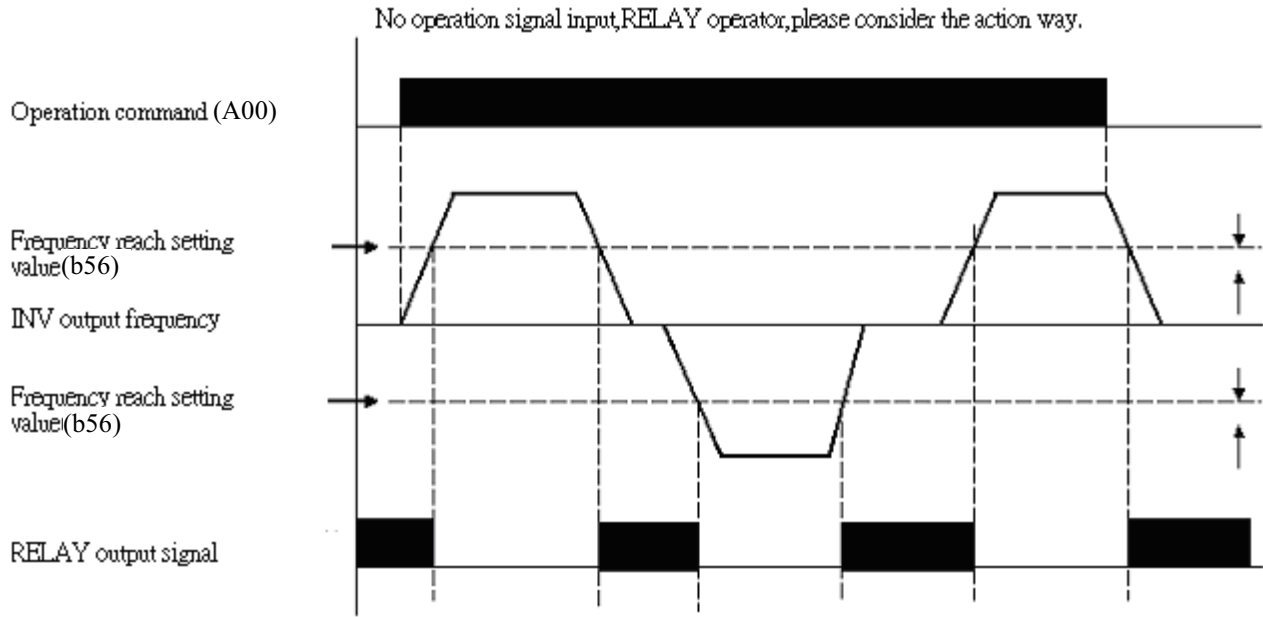
b55 / b60 = 002 Preset output Frequency b56 ± b57 reached.



b55 / b60 = 003: Frequency detection $F_{out} > b56$



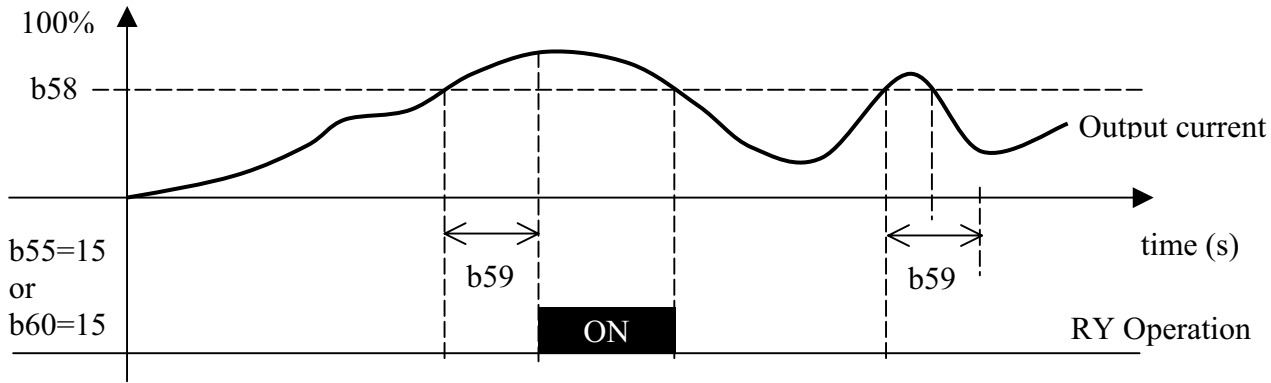
b55 / b56 = 004: Frequency detection Fout < b56



b58 Output Current reached set value

b59 Output Current detection time

- b55: Output current detection value > b58
 - b60: Output current detection value > b58
 - b58: Set value (000-100%) of motor rated current b09
 - b59: Set value (00.0-25.5s)
- } When set value is 015



b60 Multi-function output transistor T+, T- (Option card)
000: Inverter output on - RUN
001: Frequency reached (Preset target frequency \pm b57)
002: Frequency reached (Preset output frequency level (b56) \pm b57)
003: Frequency Detection (>b56)
004: Frequency Detection (<b57)
005: Fault output
006: Auto restart
007: Momentary power loss
008: Emergency Stop (E.S.)
009: Base Block (b.b.)
010: Motor overload protection
011: Inverter overload protection
012: xxx Not used xxx
013: Power On
014: Communication error
015: Output current detection

Note: Frequency priority: Jog → Preset frequency → External analog frequency signal

Refer to parameter b55 description for more details.

b61 AIN signal select
000: 0~10V/0~20mA
001: 2~10V/4~20mA

Note: Set switch SW2 (V/I signal select) on inverter control board to required position

b61 = 000: 0~10V/0~20mA

b61 = 001: 2~10V/4~20mA

b62 AIN Gain (%) 000 - 200
b63 AIN Bias (%) 000 - 100

1.) b64 = 000: 0V (4mA) corresponding to lower frequency limit, 10V (20mA) corresponding to upper frequency limit.

2.) b64 = 001: 10V (20mA) corresponding to lower frequency limit, 0V (4mA) corresponding to upper frequency limit.

Fig (1) example settings below:

	b62	b63	b64	b65
A	100%	050%	000	000
B	100%	000%	000	000

Fig (2) example settings below:

	b62	b63	b64	b65
C	100%	050%	000	001
D	100%	000%	000	001

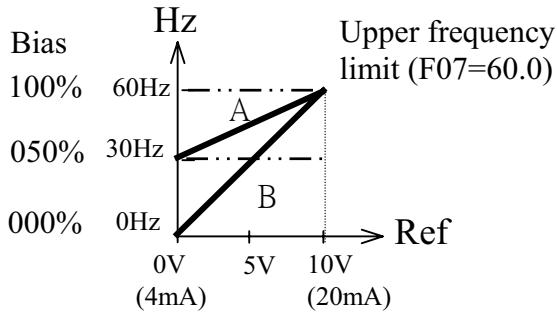


Fig (1)

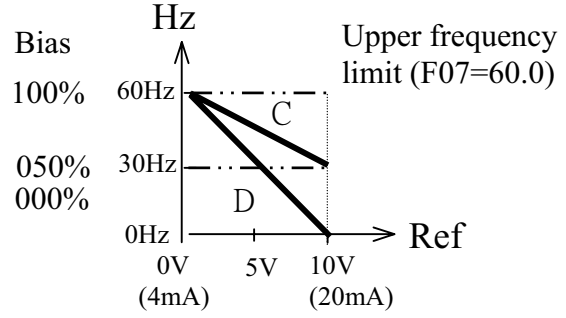


Fig (2)

Fig (3) example settings below:

	b62	b63	b64	b65
E	100%	020%	001	000

Fig (4) example settings below:

	b62	b63	b64	b65
F	100%	100%	001	001

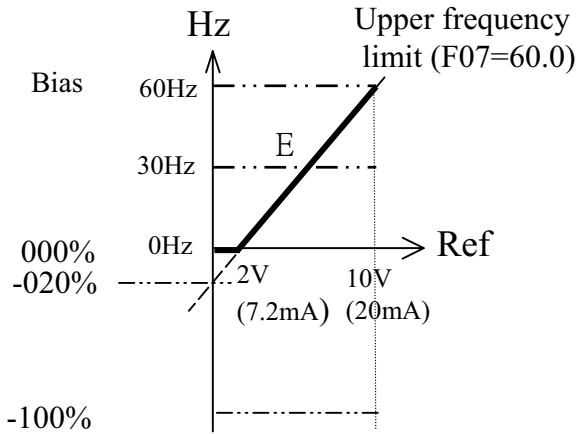


Fig (3)

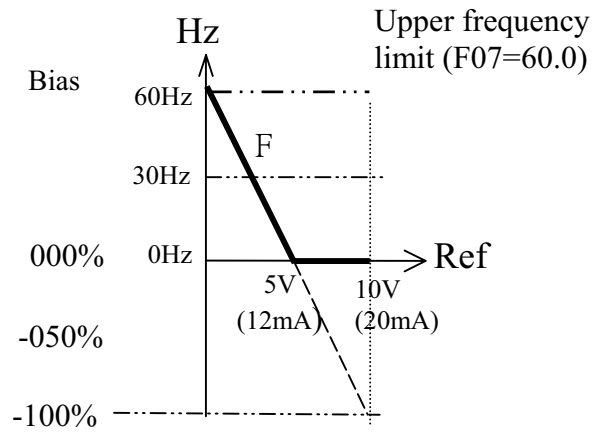


Fig (4)

Note: 'Ref' = Analogue frequency reference signal V or I

b64 AIN Bias:	000: Positive	001: Negative
b65 AIN Signal Slope direction.	000: Positive	001: Negative
b66 AIN signal scan time confirmation. (mSec × 8):	001 – 100	

Refer to b62/b63 description

The inverter reads A/D average value every $b66 \times 8\text{mS}$. The user can set scan interval time according to noise in the operation environment. Increase value of b66 if electromagnetic noise is a problem but note that the inverter response time will be slower.

b67 PID operation mode**000: PID Function disabled.****001: PID Control, deviation is derivative controlled****002: PID Control, feedback is derivative controlled.****003: Same as 001 but (reverse characteristics control).****004: Same as 002 but (reverse characteristics control).**

b67 = 001, D is the deviation from (target value – feedback value) in the unit time (b71).

= 002, D is the deviation of feedback value in the unit time (b71).

= 003, D is the deviation of (target value – feedback value) in the unit time (b71).

If the deviation is positive, the output frequency decreases, vice versa.

= 004, D is the deviation of feedback value in unit time (b71).

When the deviation is positive, the output frequency decreases, vice versa.

b68 Feedback gain : 0.00 - 10.0

b68 is feedback gain, ie feedback value = detected value × b68.

b69 P: Proportional gain : 0.00 - 10.0

b69: Proportional gain for P control.

b70 I: Integral time (s) : 00.0 - 100

b70: Integral time for I control

b71 D: Differential time (s) : 0.00 - 10.0

b71: Differential time for D control.

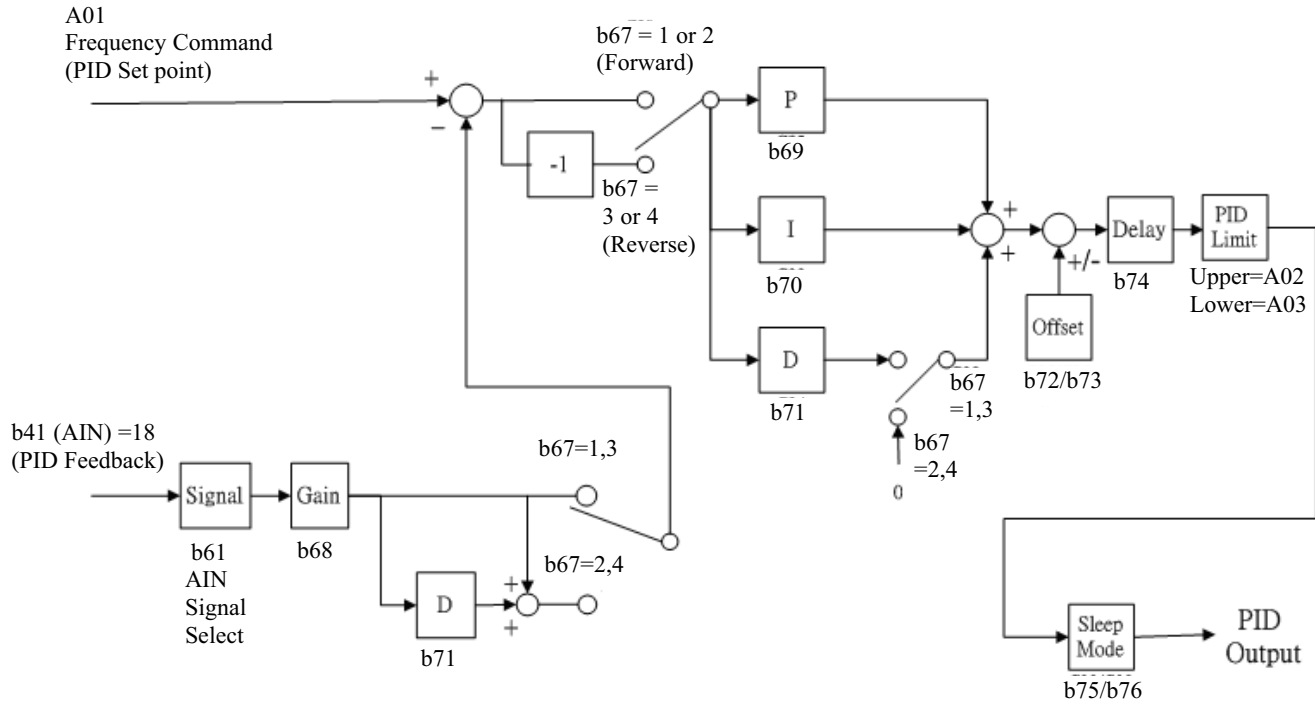
b72 PID offset**000: Positive direction****001: Negative direction****b73 PID offset adjust (%) : 000 ~ 109%**

PID operation result can be adjusted by b73 (b72 effects the polarity of b73).

b74 PID update time (s) : 00.0 - 02.5

b74: the refresh time of PID output command.

Note: PID function is used in flow control, fan air volume control and temperature control. Control flow is as the following figure:



1. In PID mode, select AIN on TM2 as PID feedback signal, Set b41 = 018.
2. The PID set-point control input is set by parameter A01 (selections 000 & 001). This value is stored in b45.

b75 PID Sleep frequency (Hz) 00.0~200Hz
b76 PID Sleep delay time (sec) 00.0~25.5sec

PID sleep mode can be set by using function codes below: -

b67 = 001~004 (PID Enable)

b41 = 018 (AIN is PID feedback signal)

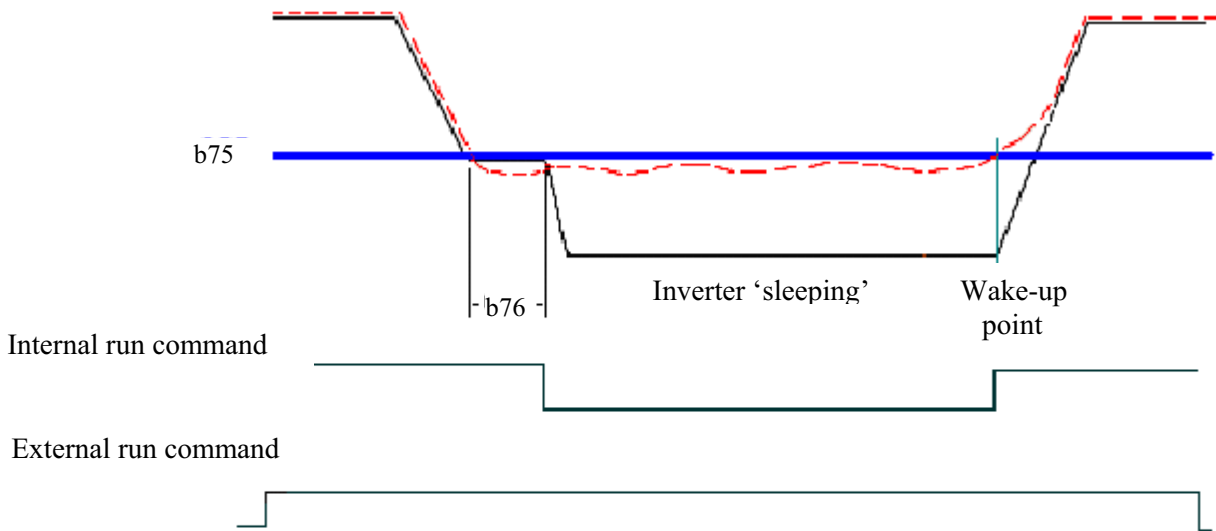
b45 = PID preset frequency

b75 = sleep start frequency, (Hz)

b76 = PID sleep delay time, (s)

When PID output frequency becomes lower than PID sleep start frequency (b75) for a period of time (b76), the inverter output will decelerate to zero speed (Sleep mode). When the PID output frequency becomes higher than the sleep start frequency (b75), the inverter output accelerates to PID output frequency (Wake-up mode).

Sleep-mode; Typical example:



- Inverter output frequency
- - - PID output
- Sleep frequency (F38)

b75: Sleep level
b76: Sleep delay

b77 Inverter Communication Address:	001~ 254
--	-----------------

b77 sets communication address for a specific inverter when multi-inverters are controlled by serial communication method.

b78 Baud Rate (bps)	000: 4800 001: 9600 002: 19200 003: 38400
----------------------------	--

b79 Stop bit	000: 1 Stop bit 001: 2 Stop bit
---------------------	--

b80 Parity bit	000: No parity 001: Even parity 002: Odd parity
-----------------------	--

b81 Data bits	000: 8 bits data 001: 7 bits data
----------------------	--

1. RS-485 communication: (requires RS485 port device)(Option)

1 to 1 control: One PC or PLC controls one inverter (b77 is set to 001~254).

1 to many control: PC or PLC or other controllers control several inverters (up to 254 inverters with b77 set as 001~254). When the communication address = 000, the inverter is controlled by communication regardless of the setting value of b77.

2. RS-232 communication: (requires RS232 port device)(Option)

1 to 1 control: PC or PLC or controller controls one inverter (b77 is set to 001~254).

- ※**Note:**
- a. The baud rate (b78) and communication format (b79/b80/b81) of PC (or PLC or other controller) and inverter should be the same.
 - b. The inverter will validate any modified parameters after the parameters are modified by PLC or PC etc.
 - c. Communication protocol: refer to EDX communication protocol description.
 - d. Parameters b77~b81 cannot be changed in communication mode.

b82 Communication error detection time (s)**b83 Communication error – inverter response**

- (1) Time-out detection time: 00.0~25.5sec; setting 00.0 sec: disable time-out function.

Default = 00.0sec

*Cannot be changed in communication mode.

- (2) Time-out operation selection:

000 : Deceleration to stop (A05 : Deceleration time 1).

001 : Coast-to-stop.

002 : Deceleration to stop (b01 : Deceleration time 2).

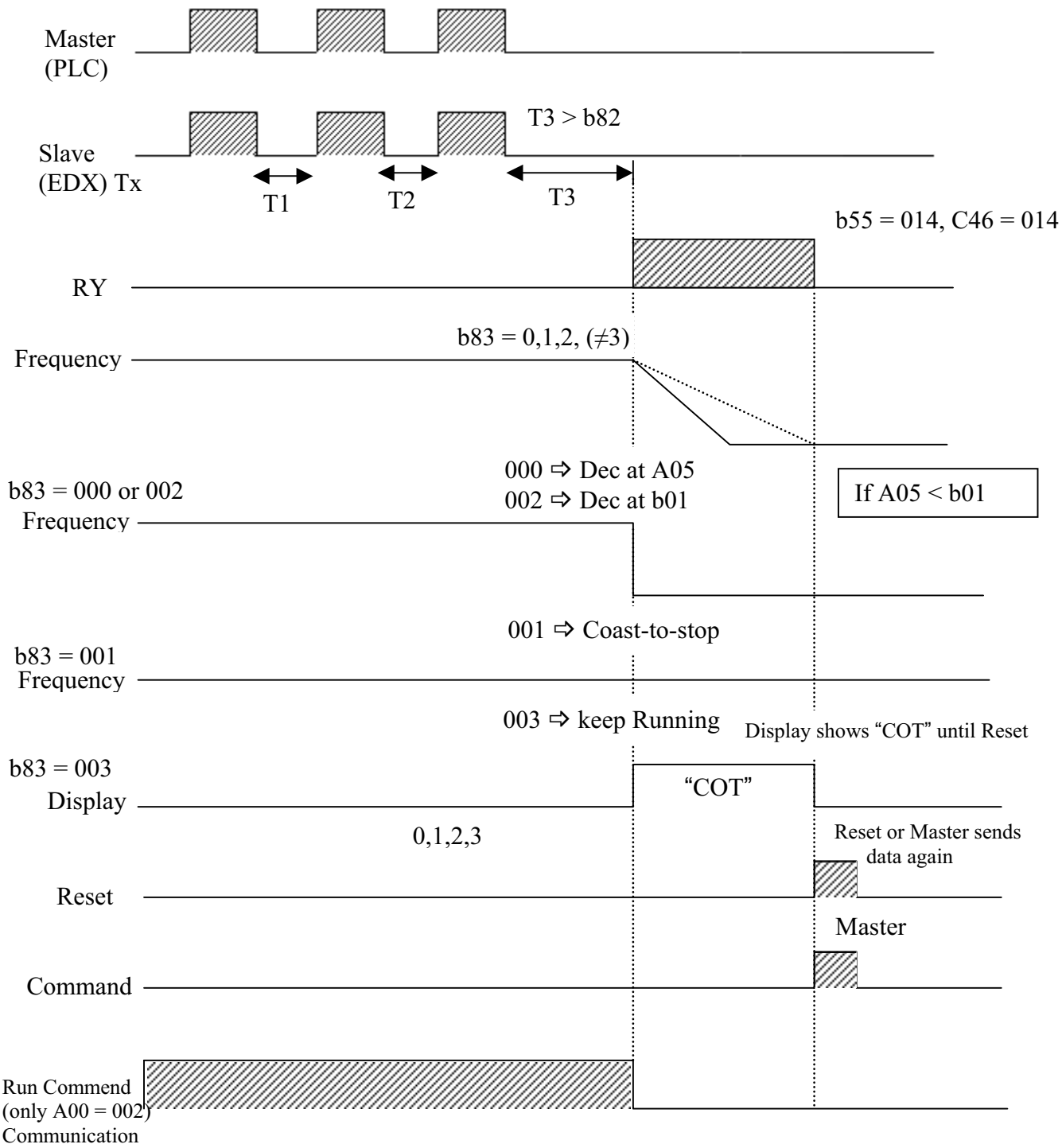
003 : Continue operating (Ignore error).

Default = 000

*Cannot be changed in communication mode.

See Communication error timing diagram following.

b82/b83 Communication error timing diagram



b84 Load / Remote control select

• Local mode

Run command

Only Run/Stop on the keypad can control ON / OFF and the setting of A00 has no relationship.

Frequency command

When b84 = 000: only UP/DOWN on the keypad can control and the setting of A01 has no relationship.

When b84 = 001: only VR on the keypad can control and the setting of A01 has no relationship.

• **Remote mode**

Run command from the run parameter (A00) set

Frequency command from the frequency parameter (A01) set

Tip!

Quick changeover between **LOCAL** and **REMOTE** control modes can be made by simultaneously pressing the ▼/RESET and the DATA/ENT keys on keypad. Modes can be ‘toggled’ by this method. Note that the motor must be stopped before changeover is allowed.

b85 Remote keypad control	000: Disable 001: Enable. Operation according to b92 if wire break 002: Enable. Operation at the last set frequency if wire break (Stop mode by Inverter keypad or A00 parameter as appropriate).
----------------------------------	---

When b85 = 001, the following parameters will be auto set:

Inverter communication address No 1	Data bits: 8 bit
Baud rated (bps): 38400	Parity: no parity
Stop bits: 1 bit	

Note: 1. Connect remote keypad in stop mode; control priority is with Remote keypad
2. If the remote keypad is connected in run mode, it will not be effective until the inverter is in stop mode.

b86 Carrier frequency (KHz) : 004-016 Set this parameter from 4-16KHz as required. (Default is 10 KHz).
--

Note: In situations where there is excessive audible noise from the motor or it is required to reduce electrical interference from the inverter caused by use of long cable then the carrier frequency can be adjusted as follows:-

- To reduce electromagnetic interference due to long cable etc, decrease carrier frequency.
- To reduce motor audible noise, increase carrier frequency.

b86	Carrier frequency	b86	Carrier frequency	b86	Carrier frequency	b86	Carrier frequency
004	4KHz	008	8KHz	012	12KHz	016	16KHz
005	5KHz	009	9KHz	013	13KHz		
006	6KHz	010	10KHz	014	14KHz		
007	7KHz	011	11KHz	015	15KHz		

Note: If the carrier frequency is increased the output current from the inverter will be de-rated according to the following table.

Output current (A) derating with increasing carrier frequency

EDX- Carrier frequency	020-11, 020-21, 020-23	040-11, 040-21, 040-23	075-11, 075-21, 075-23	150-21, 150-23	220-21, 220-23	075-43	150-43	220-43
4~10KHz	1.7	3.1	4.2	7.5	10.5	2.3	3.8	5.2
12KHz	1.7	3.1	4.2	7.5	10.5			
14KHz	1.6	3.0	4.0	7.0	10			
16KHz	1.5	2.8	3.8	6.8	9.8			

b87 Cooling fan control **000: Auto-run by inverter temperature**
001: Run when inverter output is ON
002: Always running.
003: Always stopped.

- 1.) b87 = 000: The fan is thermostatically controlled in order to extend the life of the fan.
- 2.) b87 = 001: The fan runs when the inverter output is running.
- 3.) b87 = 002: The fan runs when power supply is ON.
- 3.) b87 = 003: The fan does not run at any time (Care needed as inverter damage could occur)

b88 Motor rotating direction **000: Forward**
001: Reverse

Only when A00 = 000, inverter operation is controlled by keypad.

b89 Inverter capacity code (Input voltage – Output kW/HP)

b89	<i>iDrive</i> Rated Output Power	
1P2	EDX	110V - 0.18 / 0.25
1P5		110V - 0.37 / 0.5
101		110V - 0.37 / 1.0
2P2		220V - 0.18 / 0.25
2P5		220V - 0.37 / 0.5
201		220V - 0.75 / 1.0
202		220V - 1.5 / 2.0

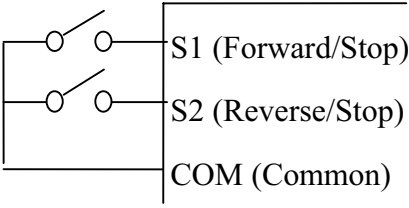
b89	<i>iDrive</i> Rated Output Power	
203	EDX	220V – 2.2 / 3.0
401		400V – 0.75 / 1.0
402		400V – 1.5 / 2.0
403		400V – 2.2 / 3.0

b90 : External control operation mode 000: Forward/ Stop-Reverse/Stop
001: Run/ Stop-Forward/Reverse
002: 3-wire—Run/ Stop

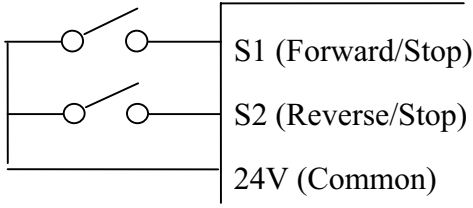
- 1.) b90 is only available when A00 = 001 (control from terminals TM2).
- 2.) When both forward and reverse commands are ON, output is stopped.

Parameter b90 = 000

(1). NPN input signal:

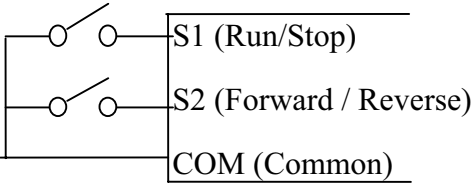


(2). PNP input signal:

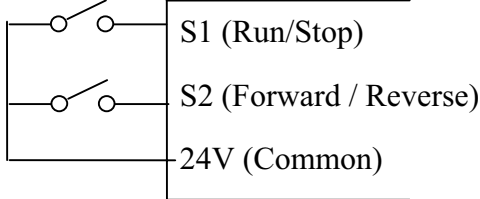


Parameter b90 = 001

(1). NPN input signal:

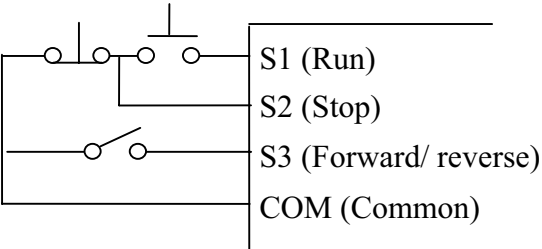


(2). PNP input signal:

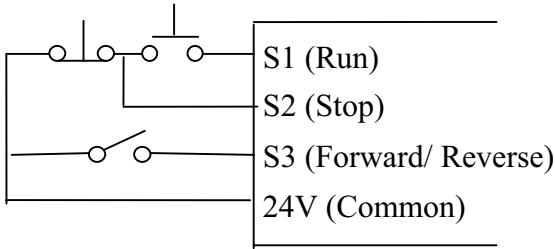


Parameter b90 = 002

(1). NPN input signal:

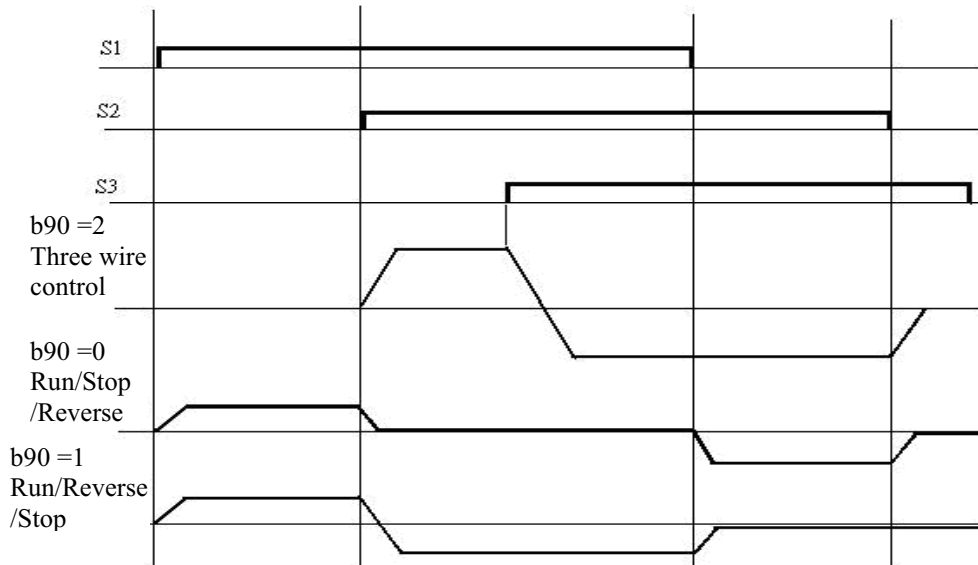


(2). PNP input signal:



Note:- In 3 wire control mode terminals S1-S3 are used , therefore parameters b35 ~ b37 are ineffective.

Parameter b90 timing and operation diagram



Note: If b91 = 001, reverse command is disabled.

b91 Reverse run	000: Reverse enable 001: Reverse disable
------------------------	---

A00 = 000 and b91 = 001, b88 (motor direction) disable, the inverter is set to forward operation.
A00 = 001 or 002, and b91 = 001, reverse command is disable.

b92 Stopping method	000: Decelerate to stop 001: Free run (Coast) to stop
----------------------------	--

- 1.) b92 = 000: after receiving stop command, the motor will decelerate (ramp) to stop according to setting of A05.
- 2.) b92 = 001: after receiving stop command, the motor will free-run (coast) to stop.

b93 Status monitoring display	000: Disable 001: Enable.
--------------------------------------	--

b93 = 001 display shows Output frequency, Motor current, Output voltage, DC link voltage, or PID feedback.

b94 Copy module	000: Copy module Disabled 001: Copy to module from inverter (Read) 002: Copy to inverter from module (Write) 003: Read / write check (Compare the parameters).
------------------------	---

Note: Parameter copy facility is applicable only to inverters with the same voltage and KW capacity.

b95 Factory default	010: Reset parameters to factory default (50Hz) 020: Reset parameters to factory default (60Hz)
----------------------------	--

b96 Software version	Displays inverter software version (Read only)
-----------------------------	---

b97 Fault records (Latest 3 Alarms) – (Read Only)
--

Chapter 5 Troubleshooting and maintenance

5.1 Fault indication and remedy

5.1.1 Fault / Error display and Diagnostics

1. Non-resettable / unrecoverable errors

Display	Error	Cause	Remedy
EPR	Memory problem	EEPROM fault	Change EEPROM
@ OV	Over voltage during stopping	Detection circuit malfunction	Contact your supplier
@ LV	Under voltage during stop	<ol style="list-style-type: none"> 1. Power voltage too low 2. Restraining resistor or fuse open circuit. 3. Detection circuit malfunction 	<ol style="list-style-type: none"> 1. Check if the power voltage is correct 2. Replace the restraining resistor or the fuse 3. Contact your supplier
@ OH	The inverter is overheated during stop	<ol style="list-style-type: none"> 1. Detection circuit malfunction 2. Ambient temperature too high or poor ventilation 	<ol style="list-style-type: none"> 1. Improve ventilation conditions 2. Contact your supplier
CTR	Current transducer detection error	Current transducer or circuit error.	Contact your supplier

Note : “@” the Failure contact does not operate.

2. Errors which can be reset manually and automatically

Display	Error	Cause	Remedy
OCS	Over-current at start-up	<ol style="list-style-type: none"> 1. The motor winding and frame short circuit 2. Motor cable ground fault 3. Power module is damaged 	<ol style="list-style-type: none"> 1. Check the motor 2. Check the motor wiring 3. Contact your supplier
OCD	Over-current at deceleration	Deceleration time is too short	Set a longer deceleration time
OCA	Over-current at acceleration	<ol style="list-style-type: none"> 1. Acceleration time is too short 2. The capacity of the motor higher than the capacity of the inverter 3. Short circuit between the motor winding and frame. 4. Short circuit between motor wiring and earth 5. IGBT module is damaged 	<ol style="list-style-type: none"> 1. Set a longer acceleration time 2. Replace inverter with the same capacity as that of the motor 3. Check the motor windings 4. Check the motor wiring 5. Contact your supplier
OCC	Over-current during running	<ol style="list-style-type: none"> 1. Transient load change 2. Transient power change 	1. Increase inverter capacity
OVC	Over voltage during operation/ deceleration	<ol style="list-style-type: none"> 1. Deceleration time setting is too short or large load inertia 2. Power voltage varies widely 	<ol style="list-style-type: none"> 1. Set a longer deceleration time 2. Add a brake resistor & brake module 3. Use a reactor on the power input side 4. Increase inverter capacity
OHC	High heat sink temperature during operation	<ol style="list-style-type: none"> 1. Heavy load 2. Ambient temperature too high or poor ventilation 	<ol style="list-style-type: none"> 1. Check if there are any problems with the load 2. Increase inverter capacity 3. Improve ventilation conditions 4. Check inverter cooling fan is operating 5. Check the setting value of parameter b87

3. Errors which can only be recovered manually but cannot be auto-recovered

Display	Error	Cause	Remedy
OC	Over-current during stop	<ol style="list-style-type: none"> 1. Detection circuit malfunctions 2. Poor connection on CT signal cable 	Contact your supplier
OL1	Motor overload	<ol style="list-style-type: none"> 1. Heavy load 2. Improper settings of b09 	<ol style="list-style-type: none"> 1. Increase motor capacity 2. Set b09 correctly according to motor nameplate.
OL2	Inverter overload	Heavy load	Increase inverter capacity
OCL	Over current limit	<ol style="list-style-type: none"> 1. Heavy Load 2. Continuous over load 	<ol style="list-style-type: none"> 1. Increase motor capacity 2. Increase ACC/ DEC time A04 ~ A05, etc 3. Set stall prevention function b23 ~ b29
LVC	Under voltage during operation	<ol style="list-style-type: none"> 1. Power voltage too low 2. Power voltage momentary dip 	<ol style="list-style-type: none"> 1. Improve power quality. 3. Use a reactor on the power input side 4. Increase inverter capacity

5.1.2 Set up & Interface Errors.

Display	Error	Description
SP0	Zero speed stop	Displayed when set frequency <0.1Hz
SP1	Fail to start directly	<p>1. If the inverter is set to external control mode (A00 = 001), and direct start is disabled (b33=001), the inverter cannot be started and will flash STP1 when Run command in ON when power is applied (see descriptions of b33).</p> <p>2. Direct start is possible when b33 = 000.</p>
SP2	Keypad emergency stop	<p>1. If the inverter is set to external control mode (A00=001) the inverter will stop according to the setting of b92 when stop key is pressed. STP2 flashes after stop. Turn the Run switch to OFF and then ON again to restart the inverter.</p> <p>2.If the inverter is in communication mode and Stop key is enabled, the inverter will stop as set by b92 when Stop key is pressed during operation and then flashes STP2.</p> <p>The PLC must send a Stop command followed by a Run command to the inverter for it to be restarted.</p>
E.S.	External emergency stop	The inverter will decelerate to stop and then flashes E.S. when there is an external emergency stop signal via the multi-function input terminals (see descriptions of b35 ~ b38).
b.b.	External base block	The inverter stops immediately and then flashes b.b. when external base block is input through the multi-functional input terminal (see descriptions of b35 ~ b38).
PID	PID feedback broken	PID feedback signal circuit error detection
---	REMOTE KEYPAD cable broken	<p>1. REMOTE KEYPAD is not connected with inverter, such a display will occur.</p> <p>2. REMOTE KEYPAD and main KEYPAD both display such signal means communication error.</p>

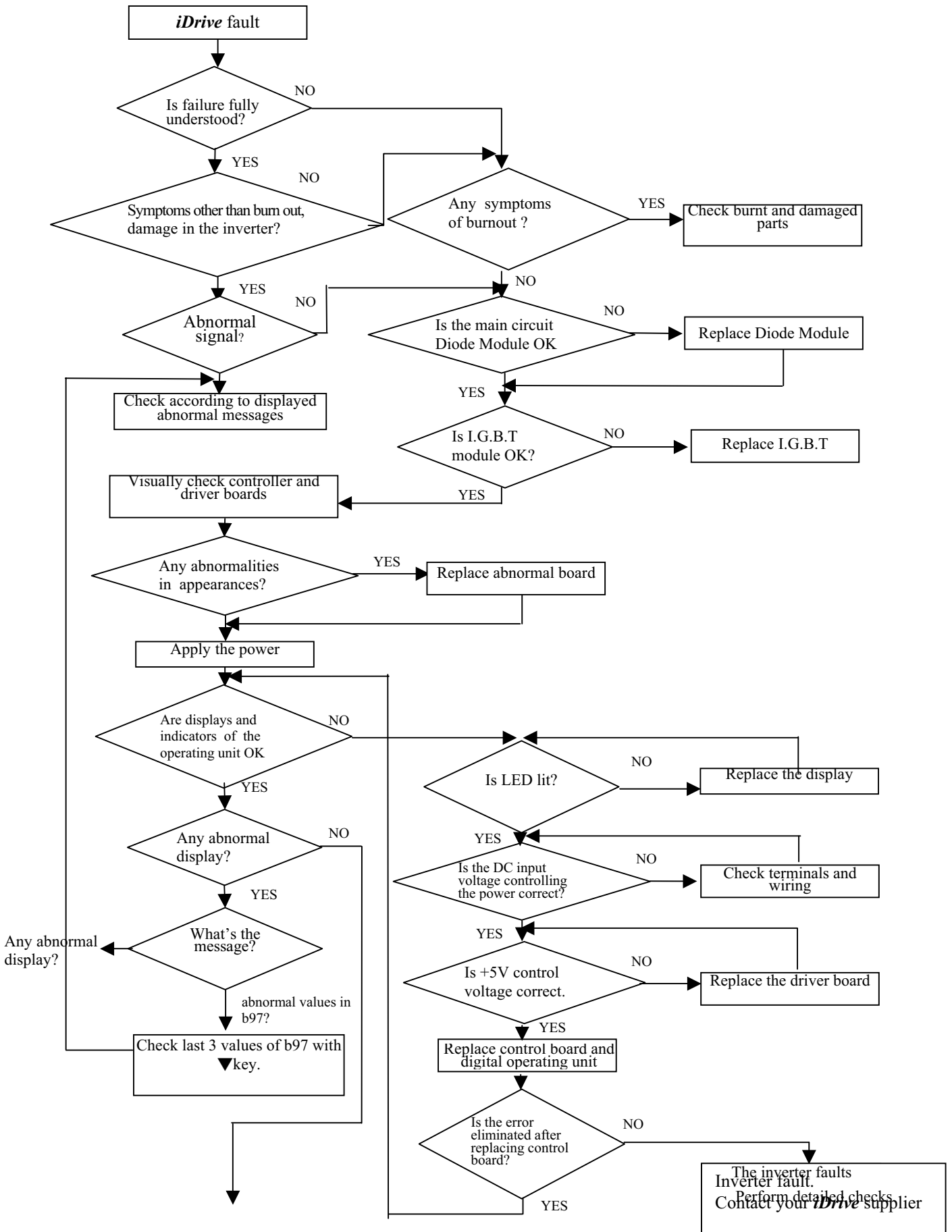
5.1.3 Keypad operation error description

Display	Error	Cause	Remedy
Er1	Key operation error	<ol style="list-style-type: none"> 1. Press ▲ or ▼ keys when $A01 > 0$ or in speed operation. 2. Attempt to modify parameters, which can not be modified during Run (see parameter list). 	<ol style="list-style-type: none"> 1. ▲ or ▼ keys can be used to modify frequencies only when $A01 = 0$. 2. Modify them after stop.
Er2	Parameter setting error	<ol style="list-style-type: none"> 1. $A02$ is in ranges of $b20 \pm b22$ or $b21 \pm b22$ 2. $A02 < A03$ 	<ol style="list-style-type: none"> 1. Change $A02$ value 2. Make $A02 > A03$
Er5	Modification of parameter is not allowed during communication	<ol style="list-style-type: none"> 1. Control command given when communications are disabled 2. Attempt to modify $b77 \sim b81$ during communication. 	Set up parameters before communicating.
Er6	Communication failure	<ol style="list-style-type: none"> 1. Incorrect cabling. 2. Incorrect settings of communication parameters. 3. Check sum error. 4. Incorrect communication program. 	<ol style="list-style-type: none"> 1. Check connections. 2. Check $b77 \sim b81$
Er7	Incorrect parameter settings	<ol style="list-style-type: none"> 1. Attempt to modify $b89$ 2. Voltage and current detection circuits work abnormally. 	<p>Reset inverter. If not possible Contact your supplier</p>
EP1	Parameter set error, Copy Unit failure	<ol style="list-style-type: none"> 1. $b94 = 1$, 2. Cannot connect with Copy Unit. 2. Copy Unit failure. 3. The voltage and capacity parameter of Copy Unit & the inverter are different. 	<ol style="list-style-type: none"> 1. Modify $b94$ 3. Change Copy Unit 4. Copy the same inverter parameter for voltage and capacity, then input.
EP2	Parameters do not match	Copy the parameter to inverter to verify the parameter is not match.	<ol style="list-style-type: none"> 1. Change Copy Unit 2. The voltage and capacity parameter of Copy Unit are different

5.2 General functional troubleshooting

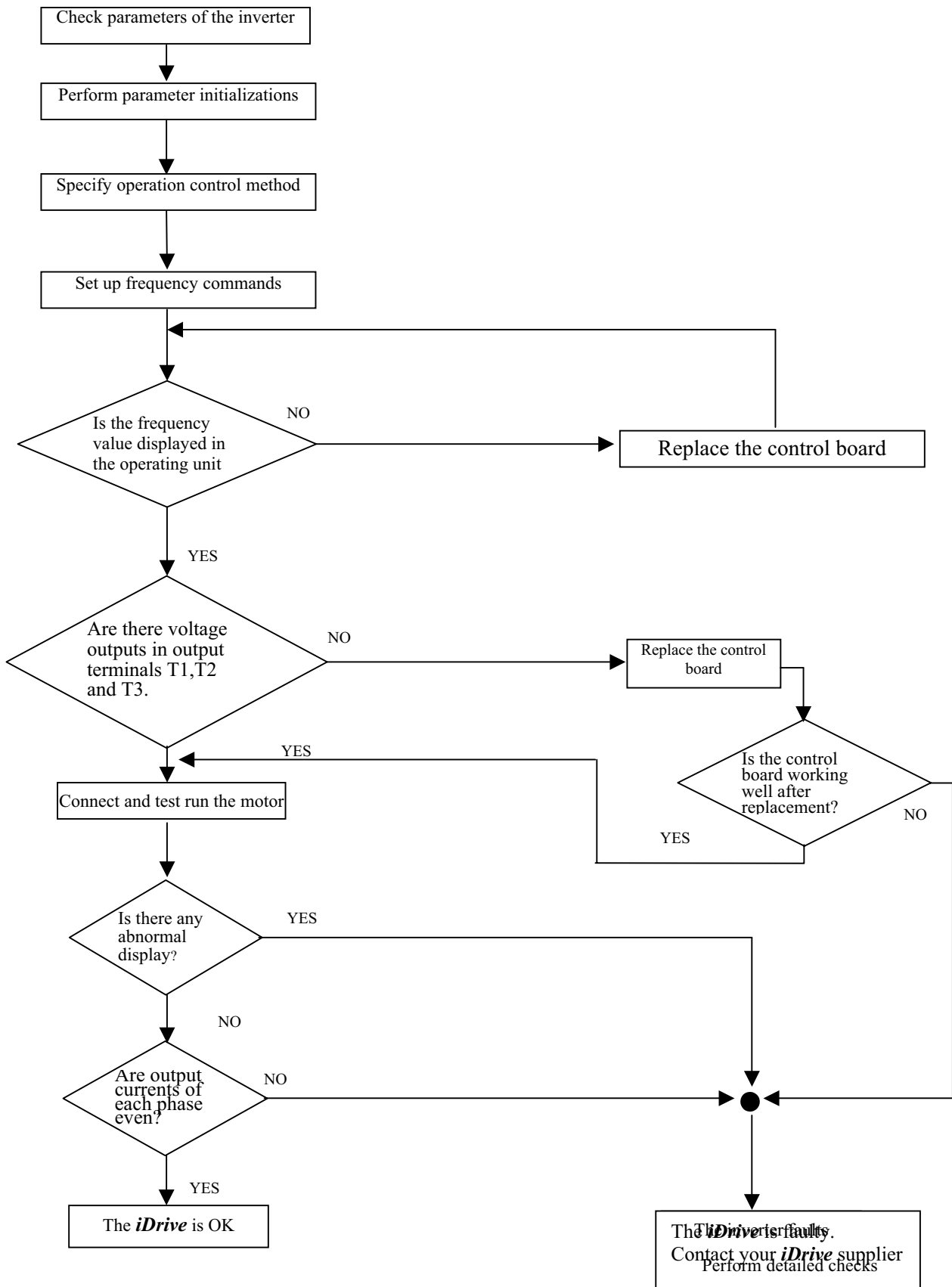
Status	Checking point	Remedy
Motor can not run	Is power applied to L1, L2, and L3(N) terminals (is the charging indicator lit)?	<input type="checkbox"/> Is the power applied? <input type="checkbox"/> Turn the power OFF and then ON again. <input type="checkbox"/> Make sure the power voltage is correct. <input type="checkbox"/> Make sure terminals are fully tightened.
	Is there voltage output at T1, T2, and T3 terminals?	<input type="checkbox"/> Turn the power OFF and then ON again.
	Is the motor mechanically overloaded?	<input type="checkbox"/> Reduce the load to allow the motor to rotate.
	Are there any abnormalities in the inverter?	See error descriptions to check wiring and correct if necessary.
	Is forward or reverse run command issued?	
	Is there an analog input signal?	<ul style="list-style-type: none"> • Is analog frequency input signal wiring correct? <input type="checkbox"/> Is voltage of frequency input correct?
	Is operation mode setting correct?	<ul style="list-style-type: none"> • Check parameter setting
Motor runs in wrong direction	Is output wiring on terminals T1, T2, and T3 correct?	<input type="checkbox"/> Wiring must match U, V, and W terminals of the motor.
	Is wiring for forward and reverse signals correct?	<input type="checkbox"/> Check wiring is correct if necessary.
The motor speed can not vary	Are wiring for output terminals T1, T2, and T3 correct?	<input type="checkbox"/> Check wiring is correct if necessary.
	Is the setting of frequency command source correct?	<input type="checkbox"/> Check the operation mode setting at the keypad.
	Is the mechanical load too heavy?	<input type="checkbox"/> Reduce load.
Motor running speed too high or too low	Is the setting of operation mode correct?	<input type="checkbox"/> Confirm the motor's specifications.
	Is the load too heavy?	<input type="checkbox"/> Confirm the gear ratio.
	Are specifications of the motor (poles, voltage...) correct?	<input type="checkbox"/> Confirm the highest output frequency.
Motor speed varies unusually	Is the gear ratio correct?	<input type="checkbox"/> Reduce the load.
	Is the setting of the highest output frequency correct?	<input type="checkbox"/> Minimize the variation of the load. <input type="checkbox"/> Increase capacities of the inverter and the motor.
	Is the load too heavy?	<input type="checkbox"/> Add an AC reactor at the power input side if using single-phase power. <input type="checkbox"/> Check wiring if using three-phase power.

5.3 *iDrive* Troubleshooting Flowcharts

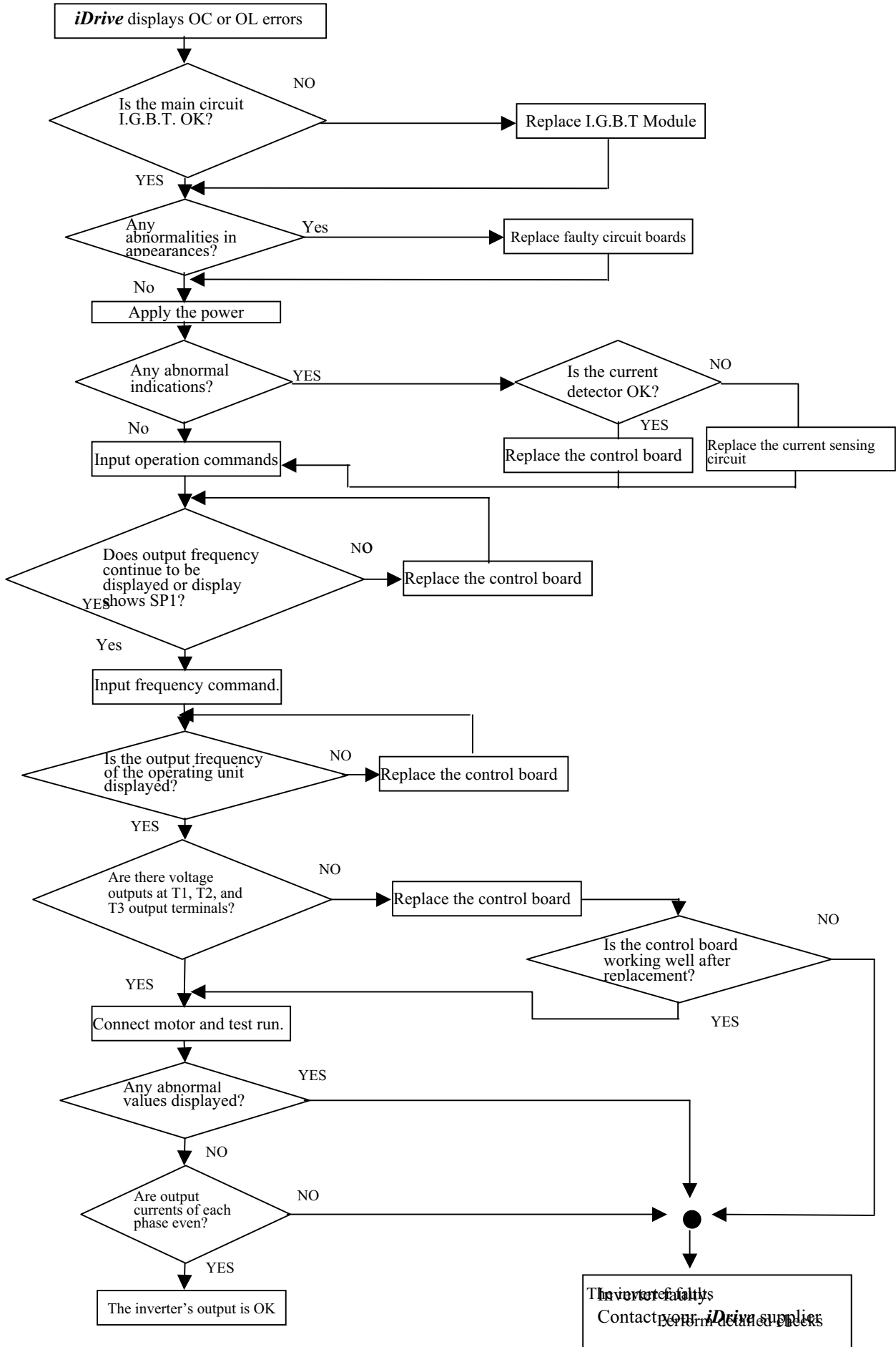


* to next page

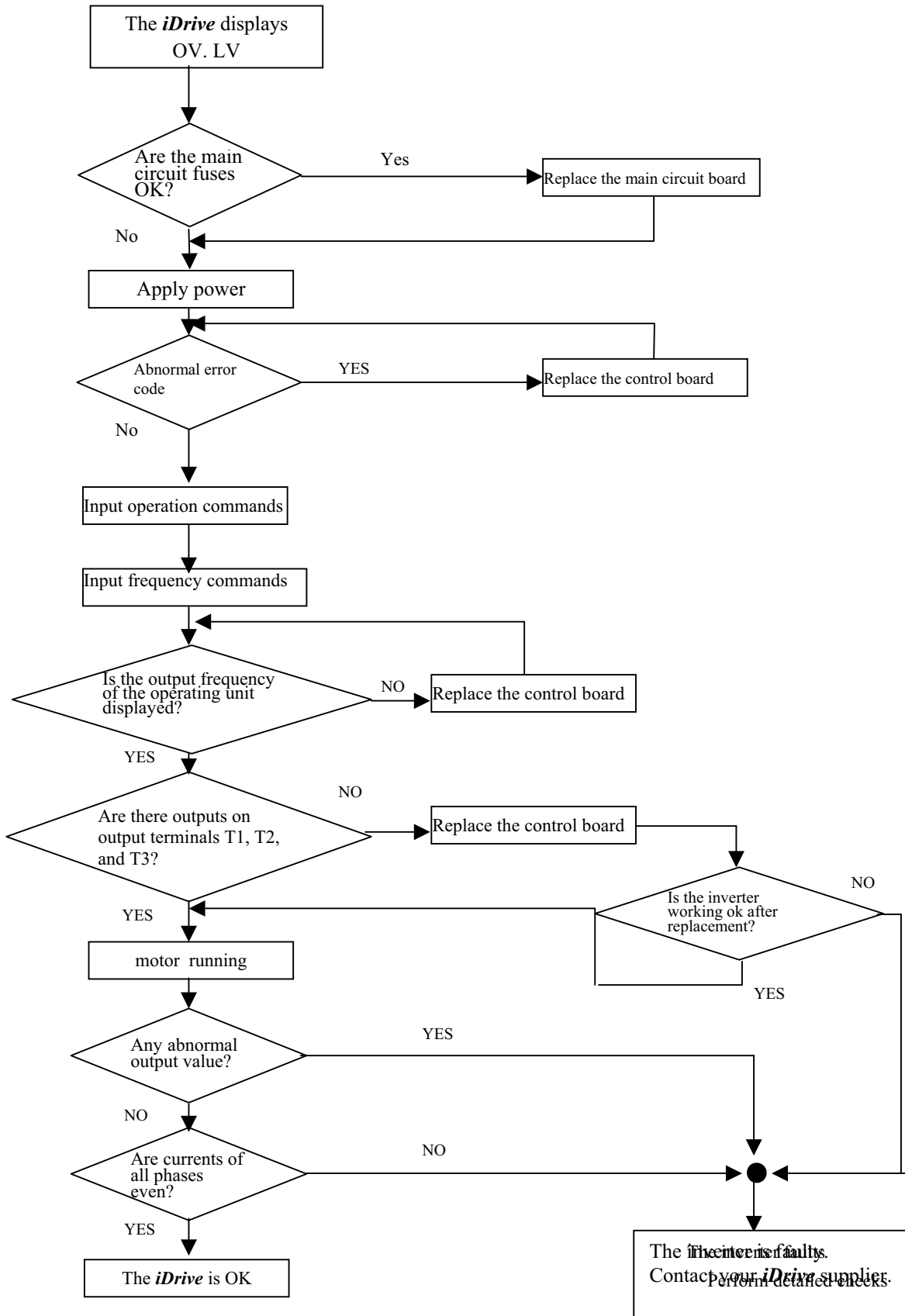
* to previous page



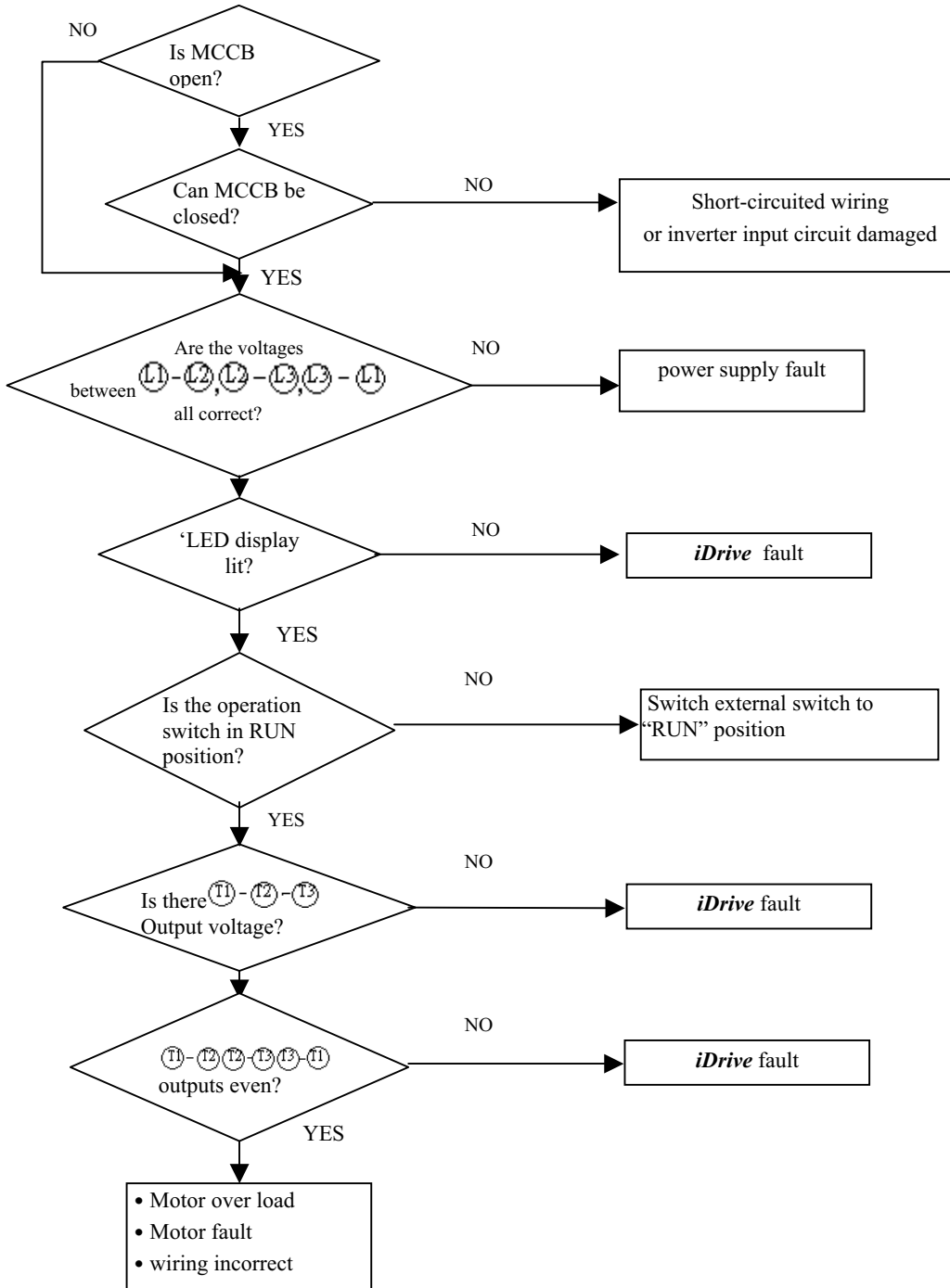
Troubleshooting for OC, OL error displays



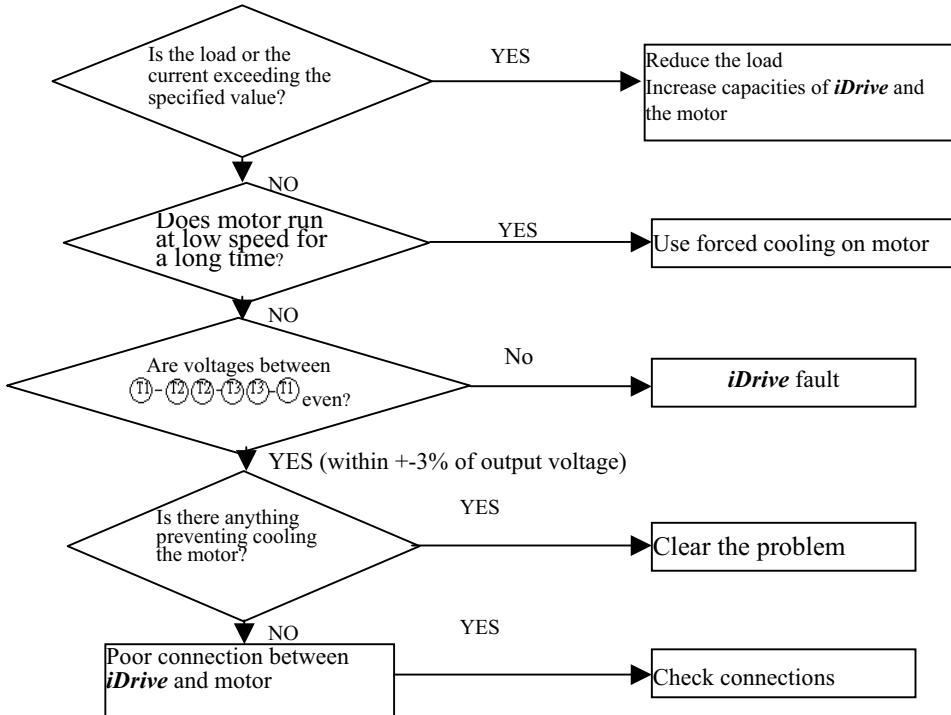
Troubleshooting for OV, LV error display



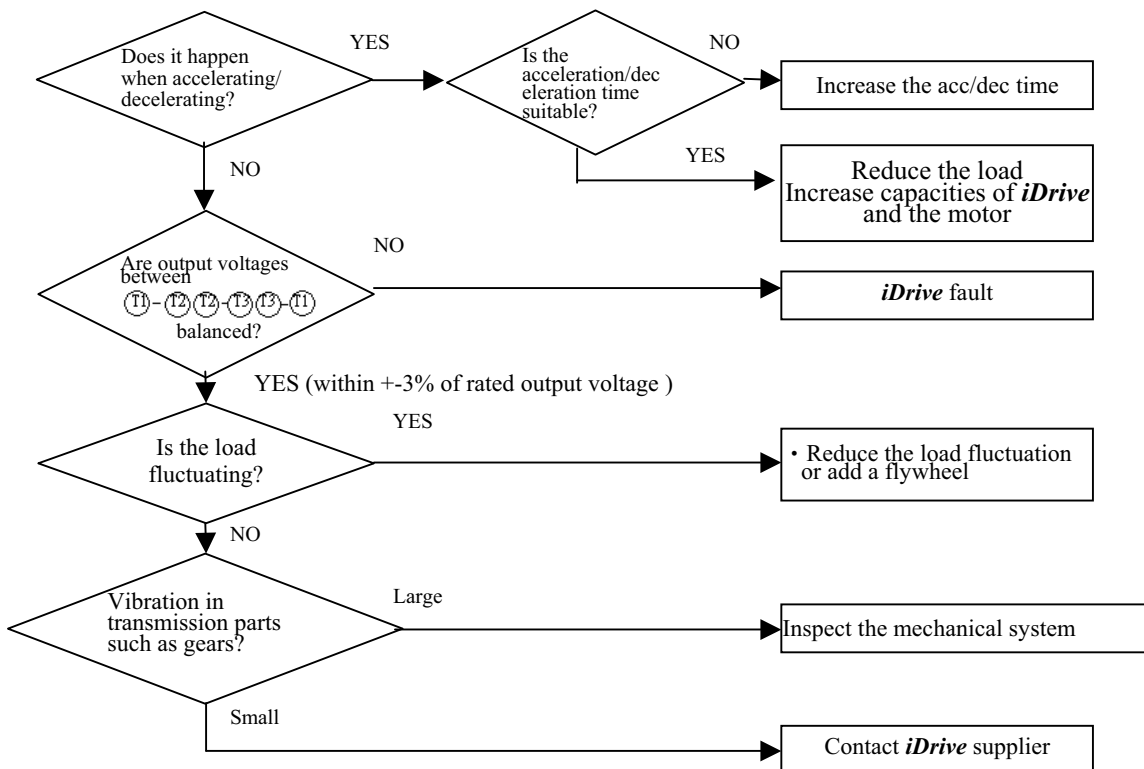
The *iDrive* will not power-up / Motor will not run



Motor overheating



Motor runs unevenly



5.4 Routine periodic checks

To ensure stable and safe operation, check and maintain the inverter regularly.

The table below lists the items requiring checking to ensure safe operation.

Check these items 5 minutes after the “Charge” indicator goes out to prevent service persons from being hurt by residual electric power.

Items	Details	Checking period		Methods	Criteria	Remedies
		Week	Year			
Circumstances around the machine	Confirm the temperature and humidity around the machine	<input type="radio"/>		Measure with thermometer and hygrometer according to installation notices.	Temperature: -10 – 50°C Humidity: Below 95% RH	
	Are there inflammable materials in proximity?	<input type="radio"/>		Visual check	No foreign matters	
Installation and grounding of the inverter	Any unusual vibration from the machine	<input type="radio"/>		Visual, hearing	No foreign matters	Secure screws
	Is the grounding resistance / earth-loop impedance correct?		<input type="radio"/>	Measure the resistance	According to national regulations	Improve the grounding path
Input power voltage	Is the voltage of the main circuit correct?		<input type="radio"/>	Measure the voltage with a multi-meter	Voltage must conform with the specifications	Improve power supply
External terminals and internal mounting screws of the inverter	Are secure parts loose?		<input type="radio"/>	Visual check Check with a screwdriver (Make sure power is OFF first)	No abnormalities or cross-threading	Secure or send back for repair
	Is the terminal base damaged?		<input type="radio"/>			
	Obvious corrosion?		<input type="radio"/>			
Internal wiring of the inverter	Trapped or over-heated?		<input type="radio"/>	Visual check	No abnormalities	Inform your supplier
	Any damage of to the insulation?		<input type="radio"/>			
Heat sink	Build-up of dust deposits	<input type="radio"/>		Visual check	No abnormalities	Clean away dust
Printed circuit board	Build-up of conductive metal or oil sludge		<input type="radio"/>	Visual check	No abnormalities	Clean up or replace the circuit board
	Discolored, overheated, or burned parts		<input type="radio"/>			
Cooling fan	Check if operating ok or unusual vibration and noise	<input type="radio"/>		Visual or hearing check	Clean, quiet, operating OK	Replace the cooling fan
	Build-up of dust deposits	<input type="radio"/>		Visual check		Clean
Power component	Build-up of dust deposits		<input type="radio"/>	Visual check	No abnormalities	Clean up
	Check circuit between terminals		<input type="radio"/>	Measure with a multi-tester (diode checker)	No short circuit or damage to input/output circuits	Replace power component or inverter
DC Link Capacitor(s)	Any unusual odor or leakage of electrolyte		<input type="radio"/>	Visual check	No abnormalities	Replace capacitor or inverter
	Any splits / swelling to case or end caps?		<input type="radio"/>			
	High temperatures?		<input type="radio"/>			

5.5 Maintenance and inspection

The *iDrive* doesn't need daily inspection and maintenance.

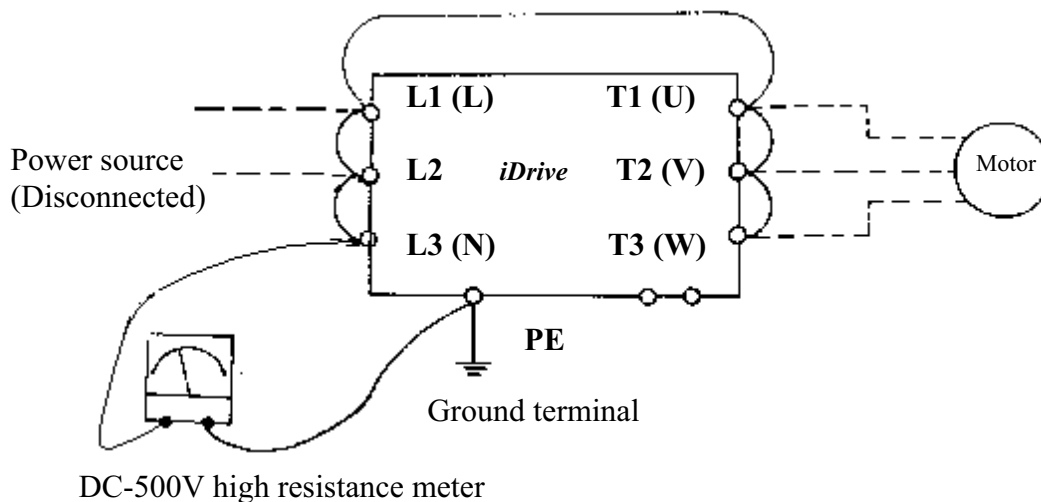
To ensure long-term reliability, follow the instructions below when performing regular inspection.

ALWAYS turn the power off and wait for the keypad LED display to extinguish before inspection or maintenance begins to avoid potential shock hazard caused by high residual charge in the DC link capacitors.

If in doubt wait 10 minutes after switching off power supply, then test across terminals + and – with a multi-meter for the presence of DC voltage.

- (1) Clean up any accumulation of dust or foreign matter inside the inverter.
- (2) Check if there are any loose terminal screws and securing screws. Tighten all loose screws.
- (3) Insulation tests
 - (a) Disconnect all leads connecting *iDrive* with external circuits when performing insulation tests.
 - (b) Internal insulation test should be performed on the main circuit of the *iDrive* only. Use a high resistance 500VDC meter with insulating resistance higher than 5M Ω .

See diagram below: -

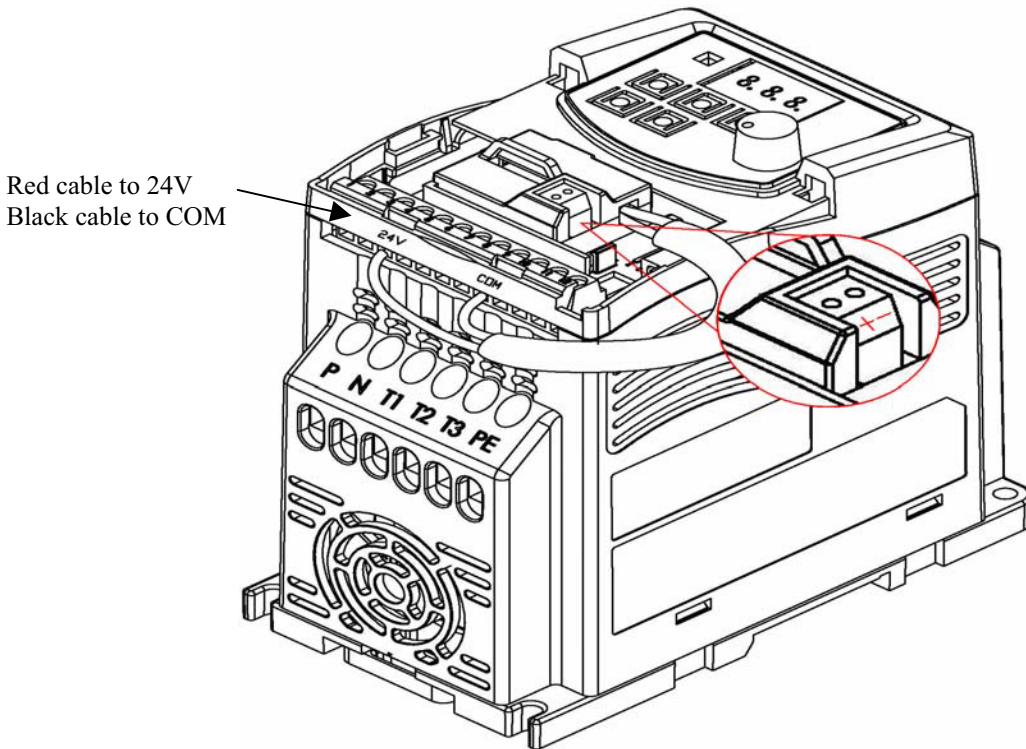


Caution! Do not perform this test on the control circuit or damage will occur.

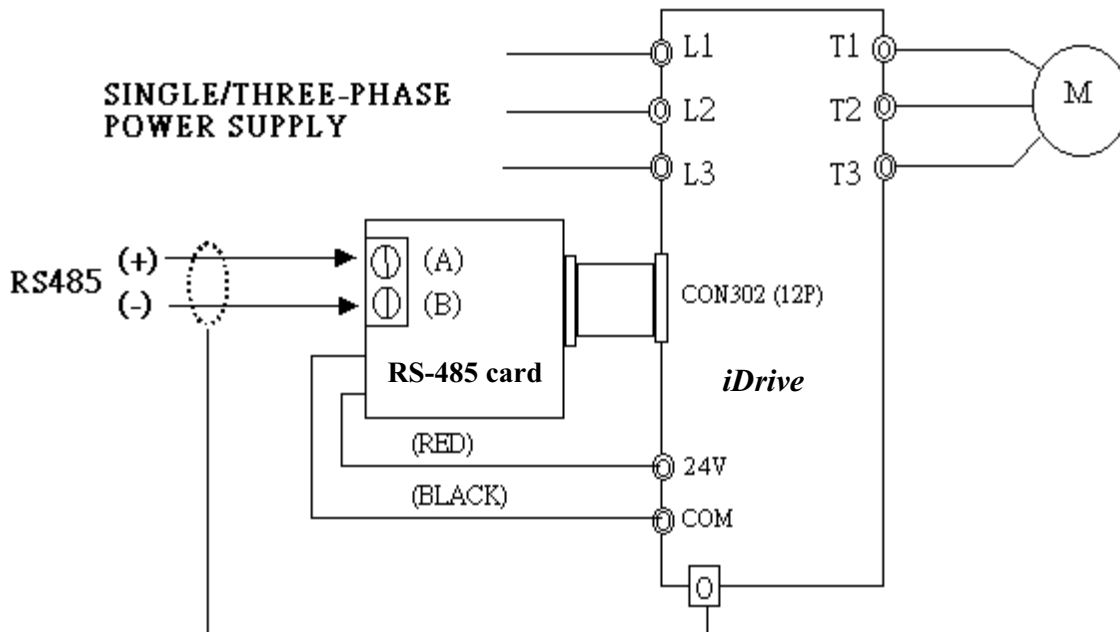
Chapter 6 Options

6.1 Option cards

6.1.1 RS-485 option card



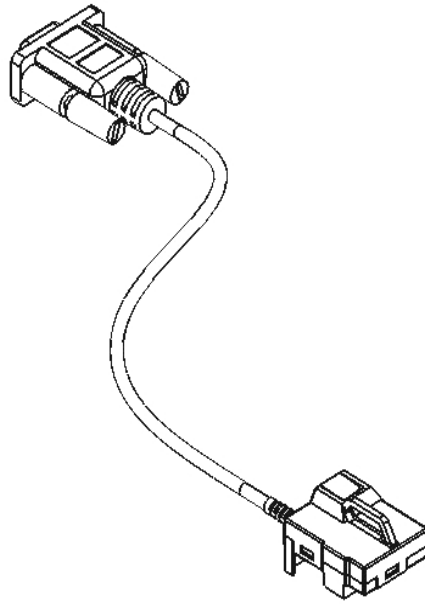
RS-485 connection diagram:



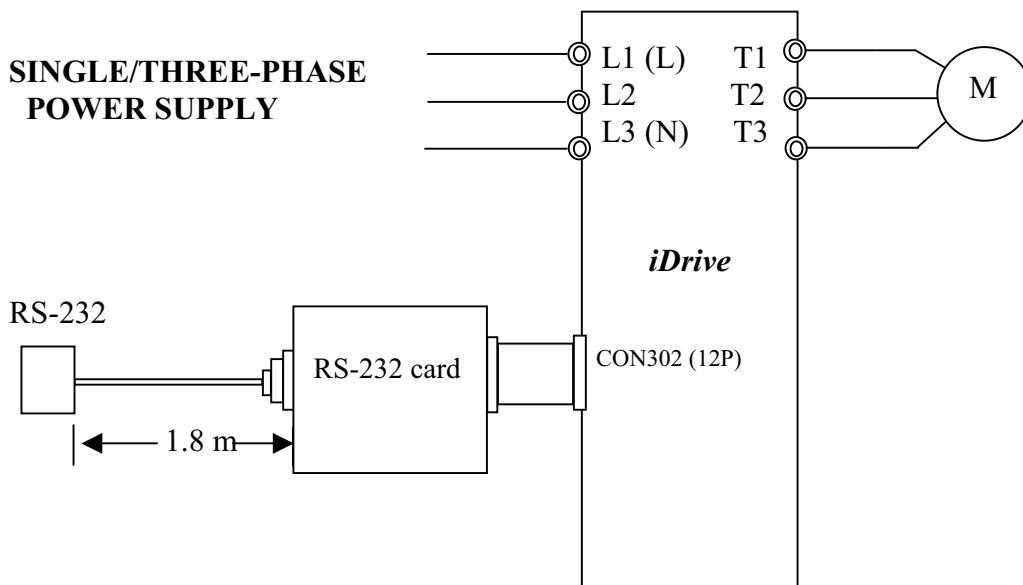
Note :

In order to avoid external interfere with option card, fit top cover to the main unit.
Use isolated RS232 / RS485 converter connecting with PC and option card to avoid damaging configuration.

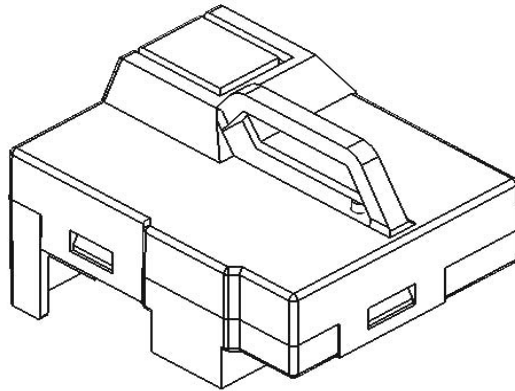
6.1.2 RS-232 option card and cable



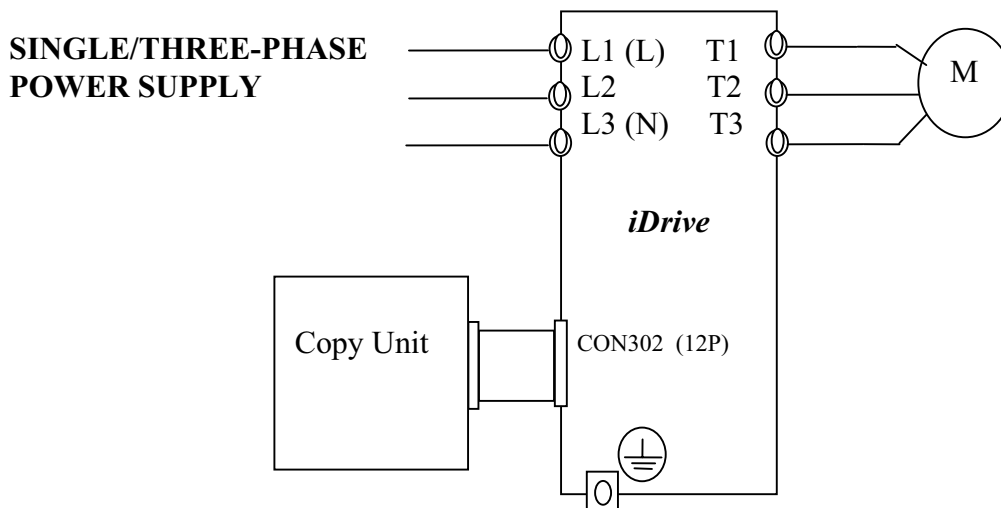
RS-232 connection diagram



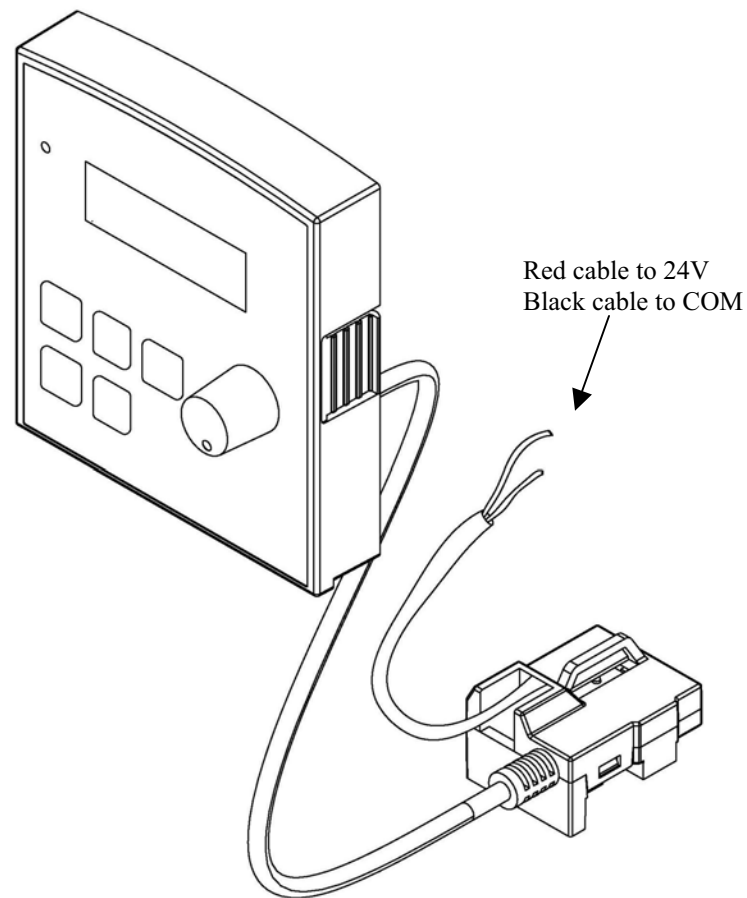
6.1.3 Program copy option card (Copy Unit/ Memory pack)



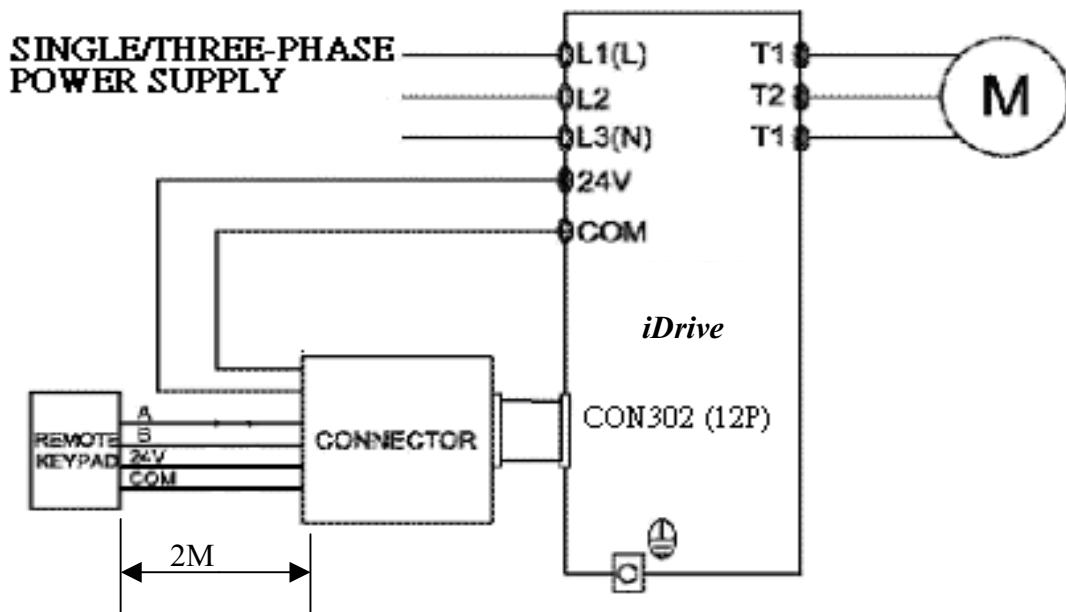
Copy Unit connection diagram



6.1.4 Remote keypad

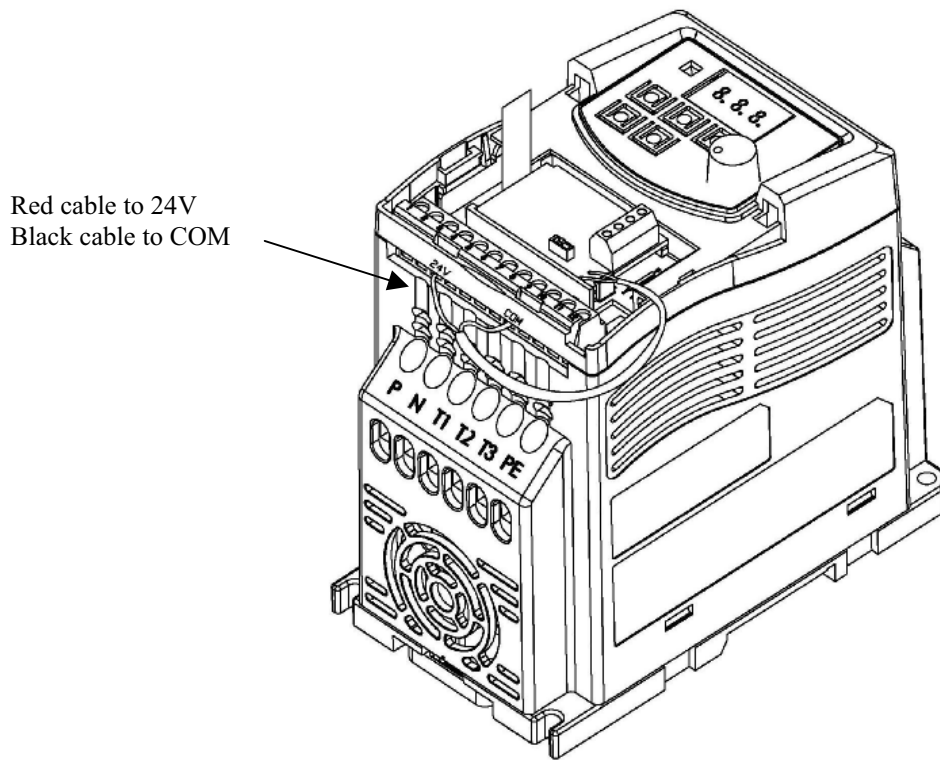


Remote Keypad connection diagram

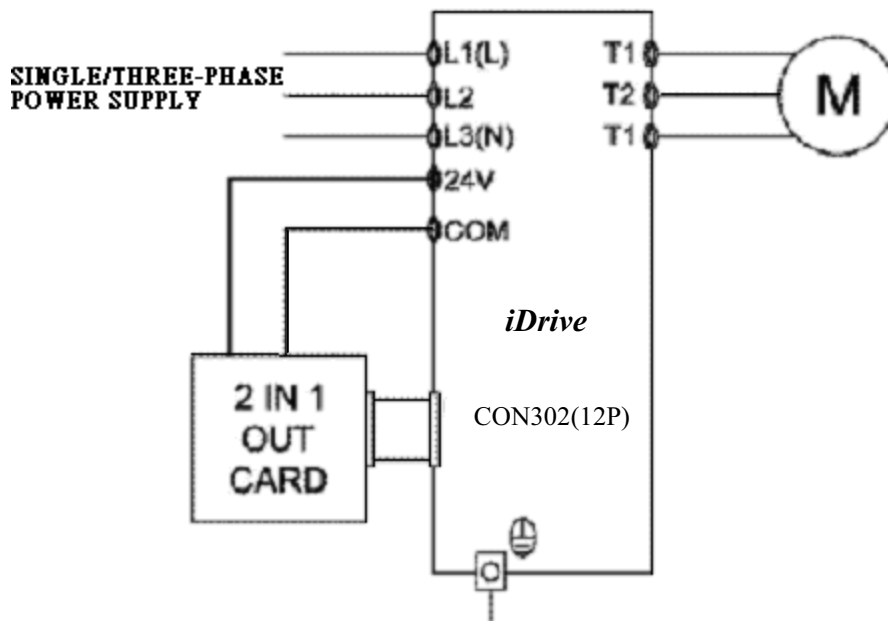


- When the inverter is powered on or off it is possible to set up or remove the remote keypad, but must be connected to TM2 24V DC power in normal use.

6.1.5 2 In/1 Out card



2 In/1 Out card wiring diagram



Appendix: *iDrive* -EDX inverter parameter setting list

Inverter model:		Company:			
Date:	Application:				
Engineer:	Note:				
Parameter Number	Setting	Parameter Number	Setting	Parameter Number	Setting
A00		b24		b62	
A01		b25		b63	
A02		b26		b64	
A03		b27		b65	
A04		b28		b66	
A05		b29		b67	
A06		b30		b68	
A07		b31		b69	
A08		b32		b70	
A09		b33		b71	
A10		b34		b72	
A11		b35		b73	
A12		b36		b74	
		b37		b75	
b00		b38		b76	
b01		b39		b77	
b02		b40		b78	
b03		b41		b79	
b04		b42		b80	
b05		b43		b81	
b06		b44		b82	
b07		b45		b83	
b08		b46		b84	
b09		b47		b85	
b10		b48		b86	
b11		b49		b87	
b12		b50		b88	
b13		b51		b89	
b14		b52		b90	
b15		b53		b91	
b16		b54		b92	
b17		b55		b93	
b18		b56		b94	
b19		b57		b95	
b20		b58		b96	
b21		b59		b97	
b22		b60			
b23		b61			

Documentation

Every effort has been made by IMO Precision Controls Ltd to ensure that this document accurately represents the *iDrive EDX* range of micro inverters at the time of going to press. Information with respects to Installation is necessarily generalised, and IMO accept no liability for contingencies over which we have no control in respect to the selection, installation and/or operation of equipment.

Copyright

All rights reserved. No part of this publication may be produced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording, or by any information storage or retrieval system without the written permission of IMO Precision Controls Ltd.

©IMO Precision Controls Ltd; 2006

IMO Precision Controls Ltd

1000 North Circular Road
Staples Corner
London NW2 7JP
United Kingdom

Telephone: +44(0)208 452 6444

Fax: +44(0)208 452 3512

Web: www.imopc.com

Email: imo@imopc.com