

HC1-c  
Series

## User's Manual

Variable Frequency AC motor Drive



TECORP Drive

### Complete Range

220V class 0.4~2.2KW (1  $\phi$  /3  $\phi$ )

400V class 0.75~2.2KW (3  $\phi$ )

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## 1. Introduction

Thank you for purchasing our high quality HC1-C series inverters.

HC1-C series frequency conversion governor is developed on the basis of HC1-A series frequency converter, It has kept the main function of A series, increased by some functions according to the request of customer at the same time, have reduced the volume of the machine, So the C series machine has lower volume, the characteristic of stronger function.

Before installation and operation please read these instructions in this manual thoroughly. For your safety, the product should only be installed, tested and adjusted by professional personnel. If you have any questions or problems, please contact our local Distributor.

High frequency device electric electronic product, for security of you, be sure to install, debugged and changed the parameter by specialized electrical engineering person. Dangerous in this manual, the symbol of noticing etc. reminds your safe precaution item while carrying, installing, operating, checking the frequency converter, please cooperate, make the frequency converter use safer, if there is doubt, the agent who please get in touch with all parts of our company consults, our professional personnel are glad to serve you.

The information contained in this manual is subject to change without notice.

**⚡ WARNING** Indicates precautions that, if not avoided, could result in death or serious injury to personnel.

**! CAUTION** Indicates precautions that, if not avoided, could result in minor or moderate injury to personnel and damage to equipment.

### ⚡ WARNING

- Always turn off the input power supply before wiring.
- Do not touch any inner part of the inverter when the change lamp is still on shortly after the AC power is cut off.
- Do not check signals while the inverter is running.
- Do not attempt to modify or alter the inverter by you, doing so can result in electrical shock or injury or even explosion.
- Be sure to ground the E terminal.

### ! CAUTION

- Do not perform voltage withstand tests on the inverter.
  - Never connect the AC main circuit power supply to output terminals U.V and W.
  - A CMOS IC is used in the control board. Handle the control board and CMOS IC carefully. The CMOS IC can be destroyed by static electricity if touched directly.
- Professional personnel must perform
- Installation, testing and maintenance.
  - The inverter should be discarded as industrial waste. Avoid burning.

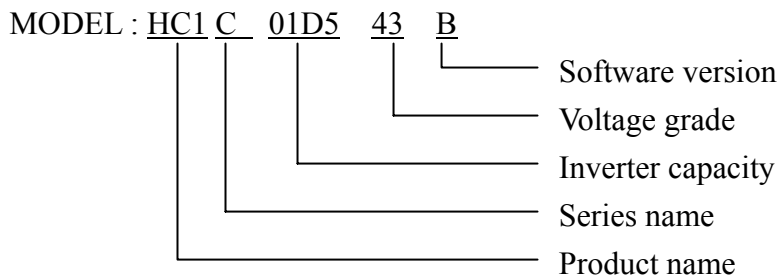
### 1.1 Receiving

Before unpacking please check the following:

- Inspect the entire exterior of the inverter to see there are any scratches or other damage resulting from shipping.
- Check if there is inverter and an operation manual in the package as soon as you open the package.
- Check the mode on the nameplate on the side of the inverter to see if this is the right model you want.
- Check if there is something wrong on the inner parts, wiring and circuit board.
- Use a screwdriver to other tools to check for tightness.
- Check if there is any other thing in the machine.
- Check if the operator buttons are all right.
- Check if the optional device you ordered is contained in it.
- Check if there is a certificate of qualification and a warranty card.

### 1.2 Nameplate information

<b>MODEL:</b>	HC1C01D543B
<b>INPUT:</b>	3 Ph 400V 50/60Hz
<b>OUTPUT:</b>	3 Ph 400V 4.0A 1.5KW
<b>Freq-Range:</b>	0.1-400HZ
<b>TECORP Electronics Co., Ltd</b>	



2.Safety precautions

2.1 Before delivery of current

**! CAUTION**

- Check to be sure that the voltage of the main circuit AC power supply matches the rated voltage of the inverter.

**! CAUTION**

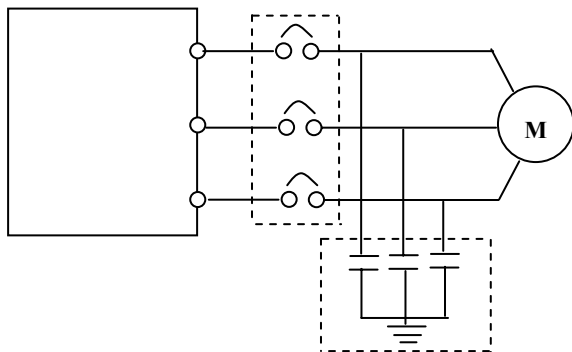
- E symbol is the ground terminal. Be sure to ground the ground terminal. E can't connect Line zero.
- Do not connect electromagnetic switches or contactors to the output circuits.

**⚡ WARNING**

- R.S.T terminals are power input terminals, never mixed with U.V.W terminals. Be sure that the wiring of the main circuit is correct.

**! CAUTION**

- Always hold the case when carrying the inverter. If the inverter is held by the front cover, the main body of the inverter may fall, Possibly resulting in injury.
- Mount the inverter to a metal or other noncombustible material.
- Install the inverter in a safe site, avoid high temperature, direct sunlight, humid air or water.
- Keep the inverter from the reach of children or non-workers.
- Install a cooling fan or other cooling device when installing more than one inverters in the same enclosure so that the temperature of the air entering the inverter is below 40°C.
- Check to be sure that the front cover is attached before turning on the power supply. Do not remove the front cover during operation.
- Do not install the inverter in a space with explosive gas.
- If the inverter is used at or above 1000m above seal level, the cooling efficiency will be worse, so please ran it downgraded.



- Do not connect contactors and related capacitor or voltage dependent resistor etc, to the output circuits.
- If it is a must to connect such devices, be sure to guarantee no inverter output when operating these devices. Otherwise, it will result in damage to the inverter. The installation diagram like this is Forbidden.

- Do not connect contactor to the input circuits. The service life of the inverter can be much longer if you start or stop the inverter by pressing the buttons FOR or REV, especially in those frequently starting and stopping conditions.

## 2.2 In delivery of current

### ⚡ WARNING

- Do not remove connectors on the inverter when in delivery of current.
- Always have the protective cover in place before delivery of current to avoid electrical shock.

## 2.3 In running

### ⚡ WARNING

- Never add or remove motor group while in running, or surge current it created will cause damage to the inverter, even the burning-up of the main circuit.
- Never remove the front cover of the inverter while in running.
- Do not come close to the machine when the fault restart function is used. If the alarmed is cleared, the machine may start moving suddenly.

### ! CAUTION

- Do not touch the heat sink, braking resistor, or Braking Resistor Unit. These can become very hot.
- Be sure that the motor and machine is within the applicable ranges before starting operation.
- Do not check the signals while the inverter is running.
- Be careful when changing inverter settings. The inverter has been setter to suitable for gender using in factory.
- Do consider the noise, vibration, and the speed limit of the motor and the mechanical devices when the inverter is running at or above the frequency of 50Hz.

### 3. Standard Specifications

#### 3.1 Individual Specifications

MODEL (HC1C---)	Input Voltage	Power (KW)	Driver Capacity (KVA)	Output Current (A)	Suitable Motor (KW)
0D7543B	3ø400V 50/60Hz	0.75	2.2	2.7	0.75
01D543B	3ø400V 50/60Hz	1.5	3.2	4.0	1.5
02D243B	3ø400V 50/60Hz	2.2	4.0	5.0	2.2
00D423B	220V 50/60Hz	0.4	1.0	2.5	0.4
0D7523B	220V 50/60Hz	0.75	2.0	5.0	0.75
01D523B	220V 50/60Hz	1.5	2.8	7.0	1.5
02D223B	220V 50/60Hz	2.2	4.0	10	2.2

#### 3.2 Common Specifications

ITEM		HC1-C series
Control Method		SPWM
Input Power Supply		400V series:340VAC-460VAC 220V series:170VAC-250VAC
Frequency Control	Frequency Range	0.1~400.0Hz
	Frequency Accuracy	Digital:0.01% (-10~40°C); Analog:0.1% (25±10°C)
	Frequency Setting Resolution	Digital:0.01Hz; Analog:1% of Max Operating Frequency
	Output Resolution	0.01Hz
	Operator Setting Method	Press ▲ or ▼ to set
	Analog Setting Method	0-5V/0-10V, 4-20mA/0-20mA
	Other functions	Frequency up/lower limit, starting frequency, stopping frequency, three skip frequencies can be individually set and so on.
General Control	Acceleration/Deceleration time	0.1-6500s four selectable combinations of independent acceleration and deceleration settings.
	V/F Curve	Set V/F curve at will.
	Torque Control	Max Torque 10.0% Max Output Voltage. The starting torque can reach 150% at 1.0Hz
	Multi-function input terminals	6 multi-function input terminals for 8 multi-speed, easy PLC, 4 Accel/Decel times, UP/DOWN command, external emergency stop.
	Multi-function output terminals	2 multifunction output terminals for the displaying and warning of on running, zero speed, counting and external fault information.
Other functions	AVR, Decelerating stop or self-stop, DC brake, auto restart tracking, easy PLC auto energy-saving, adjustable carrier Frequency (Max 16KHz) etc.	
Digital operator monitor		Frequency command, output frequency, speed output current, output voltage. P-N bus voltage and rotation direction.
Communication Control		RS485
Operating Temp		-10~40°C
Humidity		0-95% relative humidity

<b>Vibration</b>	0.5G or lower
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<b>Protection Function</b>	<b>Over Voltage</b>	230V series: DC bus exceeds 400Vdc, 400V series: DC bus exceeds 800Vdc.
	<b>Under Voltage</b>	230V series: DC bus voltage drop 200Vdc, 400V series: DC bus voltage drop 400Vdc.
	<b>Stop starting again in wink</b>	Can frequency follow way start and then after parking wink
	<b>The stall preventing</b>	Add / moderate while operating the stall is prevented
	<b>The output end shorts out</b>	The electronic circuit protecting
	<b>Other functions</b>	Fin overheated to protect, is it restrain from to overturn, trouble involution, parameter lock etc.



## 4. Storage & Installation

### 4.1 Storage

This product must be stored in its package box before installation. Pay special attention to the followings when in storage.

- It must be stored in a dry place without rubbish or dust.
- The suitable temperature for storage is between  $-20^{\circ}\text{C}$  and  $+65^{\circ}\text{C}$ .
- The relative humidity required is 0-95%, no condensation.
- There is no corrosive gas or liquid.
- It's better to lay the inverter in its original package.

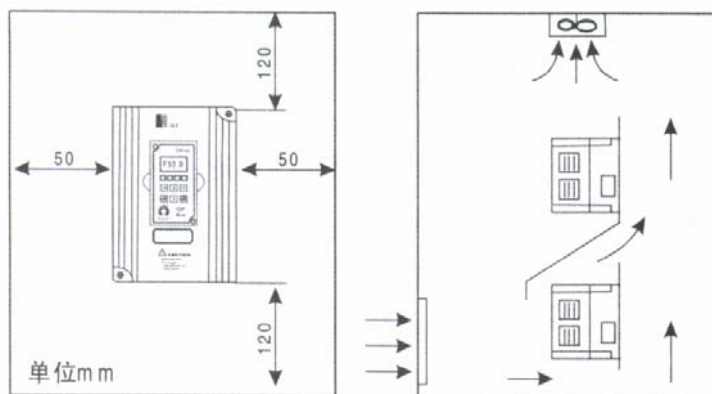
### 4.2 Location

Note: The working conditions of the inverter will affect its service life, please install the inverter under the following conditions.

- Ambient operating temperature  $-10^{\circ}\text{C}$  to  $40^{\circ}\text{C}$ .
- IP rating: IP 20 for all models.
- Protected from rain & moisture.
- Shielded from direct sunshine.
- Free from metallic particles and corrosive gas.
- Free from excessive vibration.

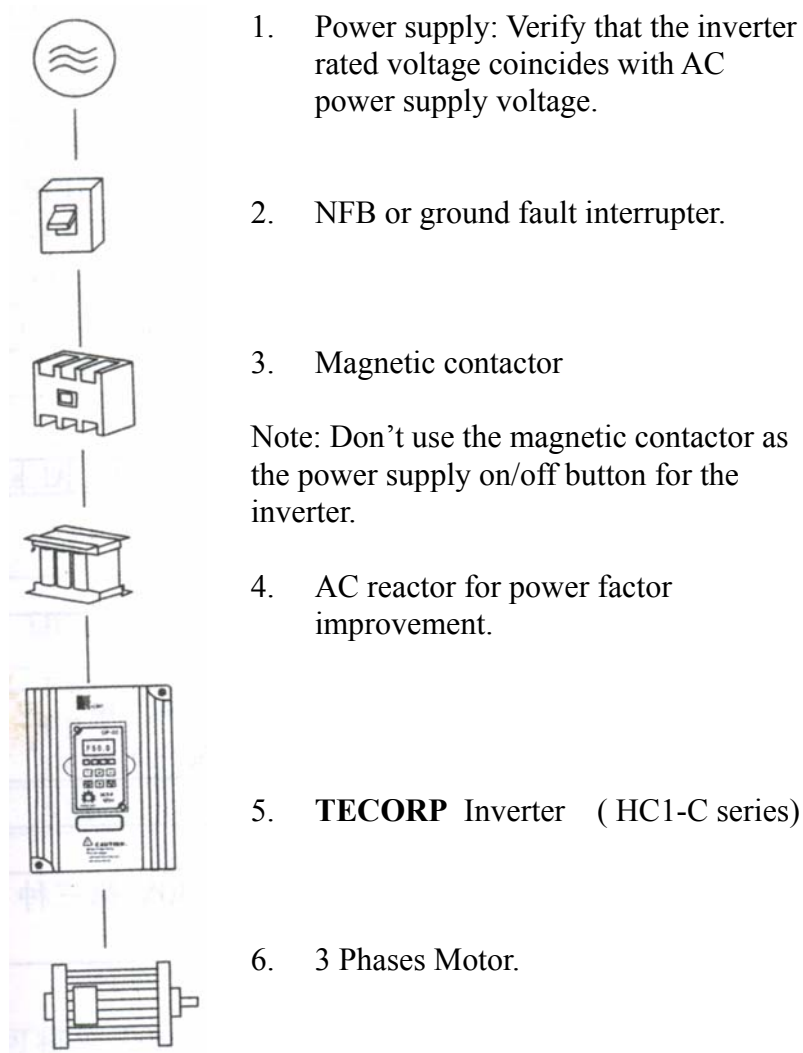
### 4.3 Positioning

- There must be enough space left around the inverter for easy maintenance and effective ventilation. See Diagram 1.
- The inverter must be installed with heat ribs oriented vertically for effective ventilation.
- If there is any instability when installing the inverter, please put a flat board under the inverter bottom base and install again. If the inverter is installed on a loose surface, stress may cause damage in main circuit.
- The inverter should be installed on non-combustible materials, such as iron plates.
- If several inverters are installed together in one cabinet, please add heat dissipation plates and provide enough space between the inverters.
- If several inverters are installed together in one cabinet, please add heat dissipation plates and provide enough space between the inverters. See Diagram 2.



5. Wiring

5.1 Main circuit schematic diagram



5.2.1 Main Circuit Terminals Arrangement

5.2.2 Control circuit terminals arrangement

FA	FB	FC	DRV	FOR	REV	RST	SPL	SPM	SPH	GND	AM	VI	AI	+10V
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	----	----	----	------

5.2.3 Function description of main circuit terminals

SYMBOLFUNCTION DESCRIPTION

R.S.T	Input terminals of AC line power.
U.V.W	Output terminals to motor.
P/Pr	External braking resistor terminals.
E	Ground terminal.

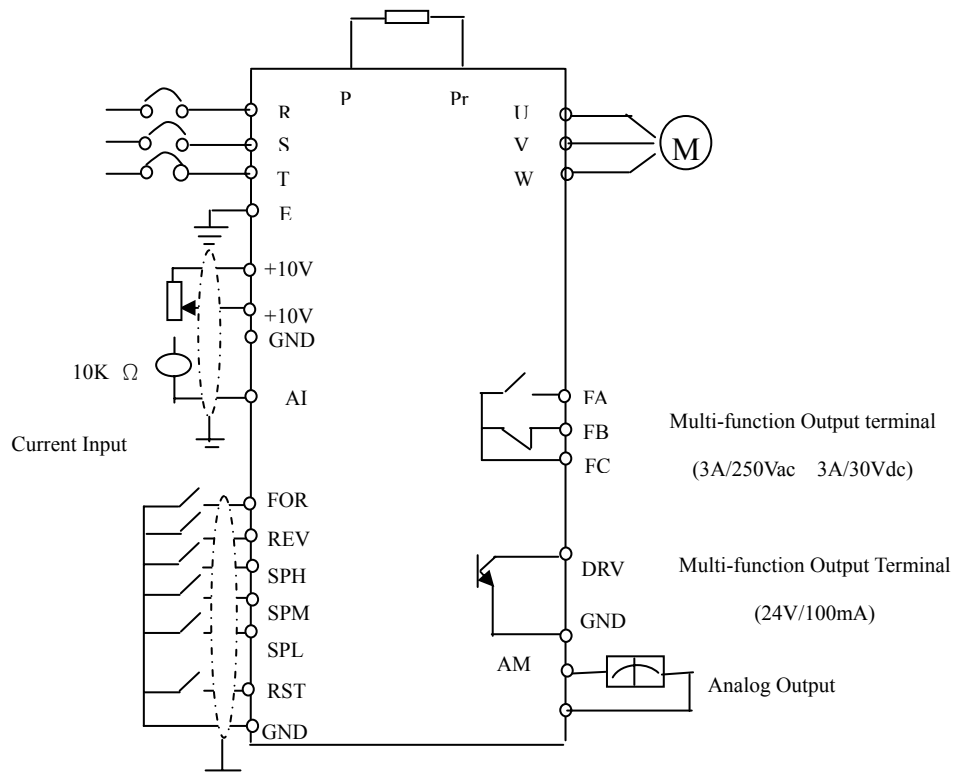
5.2.4 Function description of control circuit terminals

Symbol	Functions	Factory setting
FOR	Multi-function input1	Forward run
REV	Multi-function input2	Reverse run
RST	Multi-function input3	Reset
SPH	Multi-function input4	High speed
SPM	Multi-function input5	Medium Speed
SPL	Multi-function input6	Low Speed
GND	Ground common for input terminals	
+10	Power supply for analog freq	+10V
VI	Analog frequency reference input (voltage)	0~+10V corresponding to highest operating frequency
AI	Analog frequency reference input (current)	4~20mA corresponding to highest operating frequency
DRV	Multi-function output terminal 1	Optical couple output DC 24V/100mA
FA(EFA) FB(EFB) FC(EFC)	Multi-function output terminal 3	Fault Relay output (N/O or N/C) 3A/250VAC, 3A/30VDC
AM	Digital frequency output terminal	0-10V

5.3 Standard Connection Diagram

The whole wiring is divided into two parts. Main circuit terminal connections and control circuit terminal connections. Users can see the main circuit terminals and the control circuit terminals after removing the outer cover. The terminals must be connected correctly as the following diagrams.

The following diagram shows the standard connection of Model HC1-C



**5.4 Cautions on Wiring**

**5.4.1 For main circuit wiring**

- NFB the power supply and the input terminals (R.S.T).  
(If using ground fault interrupter, please choose the one corresponding to high frequency)
- Never connect AC power to the output terminals of U.V.W on the inverter.
- Output wires mustn't be in touch of the metal part of the outer cover, or it will cause earth short-circuit.
- Phase-shifting capacitor, LC, RC noise filters, etc, can never be connected between motor and output terminals (U.V.W)
- The main circuit wire must be enough far away from other control equipments.
- If there is a relatively long distance between the inverter and the motor, please lower the carrier frequency. Because the high leak current will cause damage to the inverter and other equipments.
- If the wire is more than 15m for 220V class products (or 30m for 400V class products) between the inverter and the motor, please choose a AC motor special for inverter or add a reactor on the side of the inverter, because a very high dV/dT produced in the motor coil will cause damage to the layer insulation of the motor.

**Specifications for NFB and Wire**

Model	HC1C 00D423B	HC1C 0D7523B	HC1C 01D523B	HC1C 02D223B	HC1C 0D7543B	HC1C 1D543B	HC1C 2D243B
Wire Size	16A	16A	32A	32A	16A	16A	16A
Wire Thickness	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	4mm <sup>2</sup>	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>
Terminal Screw	M4	M4	M4	M4	M4	M4	M4

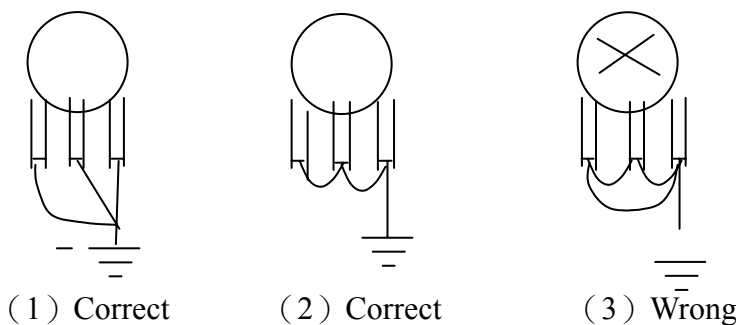
Note: The parameters above are only for reference, not a standard.

**5.4.2 For control circuit wiring (signal line)**

- Separate control circuit wire from main circuit wire and other high-power lines.
- Use twisted-pair or shielded twisted-pair cables for control circuits to prevent operating faults. The size should be 0.5-2mm<sup>2</sup>.
- Use the control terminals correctly according to your needs.

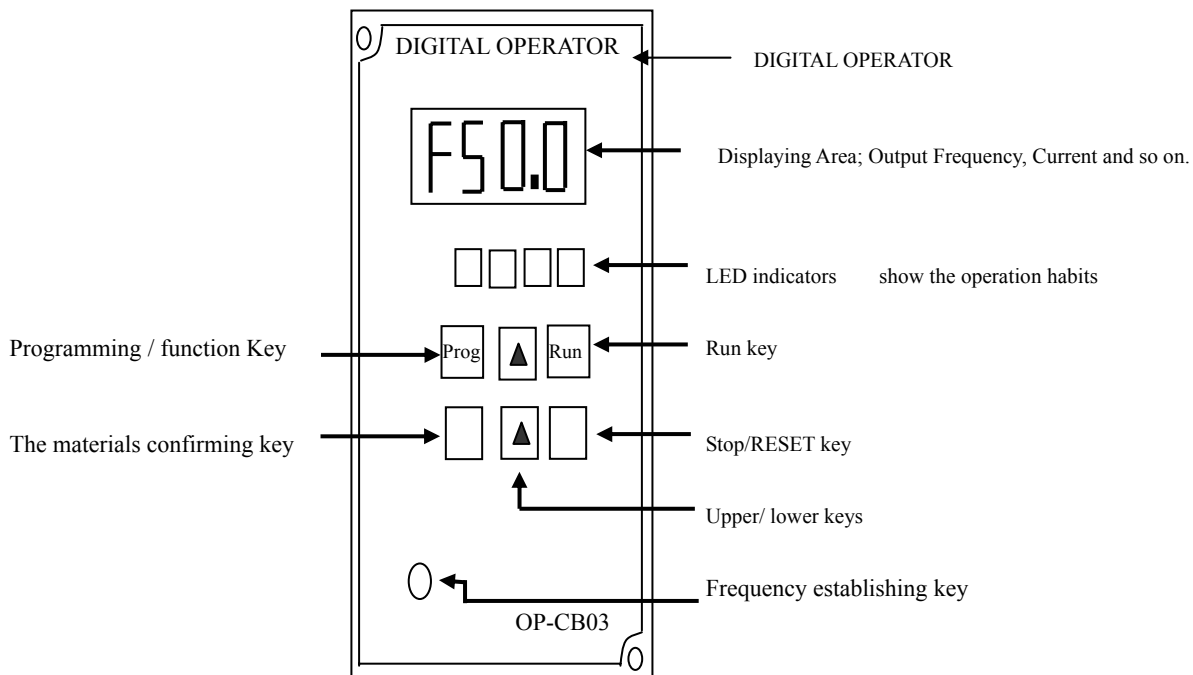
**5.4.3 Grounding**

- Grounding terminal: E  
220V class: The third grounding method. (Grounding resistance should be 100Ω or lower.)  
380V class: Special grounding method. (Earth resistance should be 10Ω or lower.)
- Choose grounding wires according to the requirements of the electric equipment.
- Avoid sharing grounding wire with other large power equipment. The grounding wire should be kept away from the power supply wires.
- The-grounding method for several inverters together should be done as the first and second diagrams. Avoid the third diagram.
- The shorter grounding wire is the better it is.

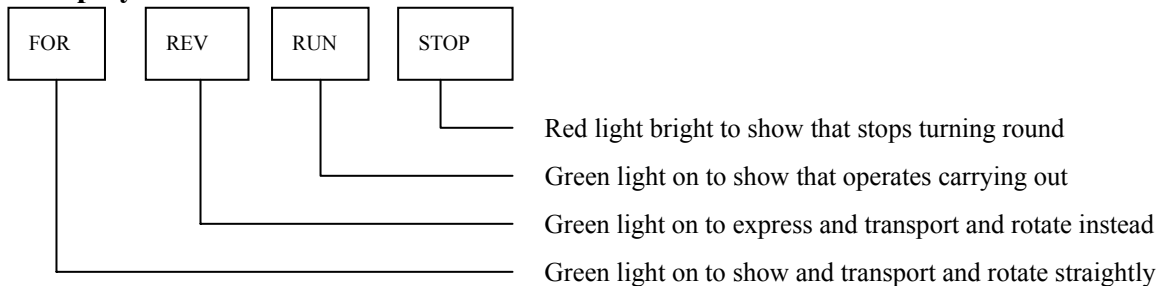


## 6. Description of Digital Operator

### 6.1 Description of Digital Operator

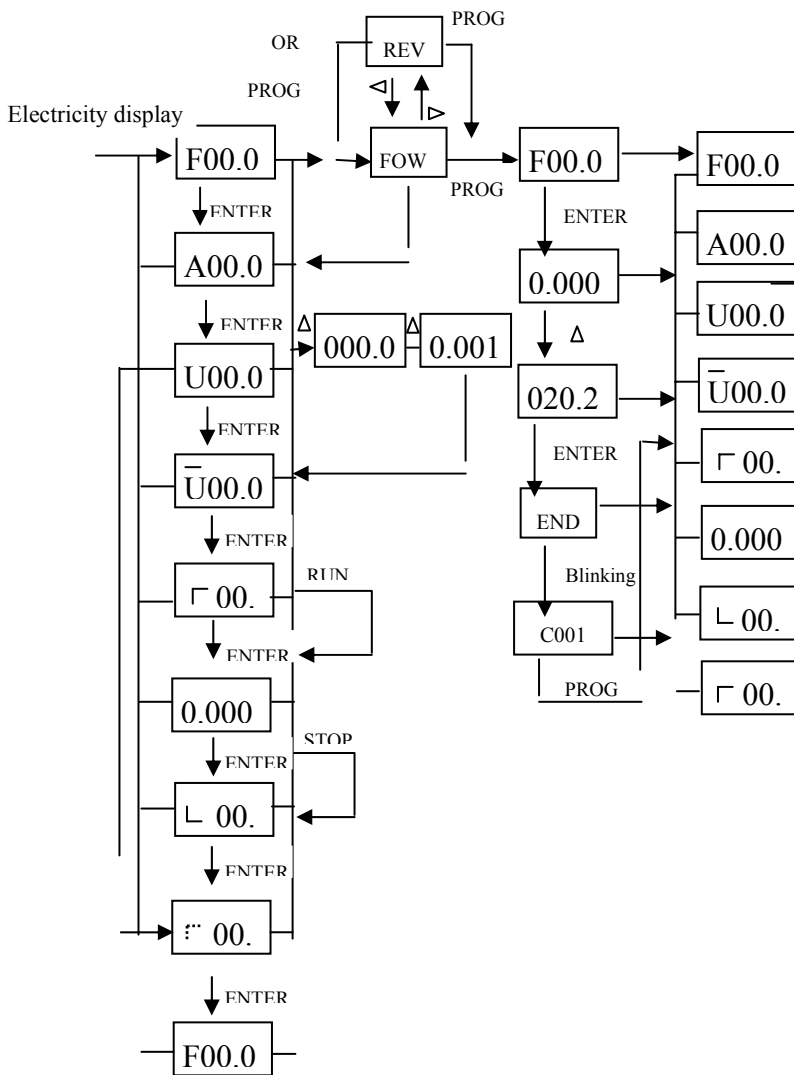


### 6.2 Display status



- While stopping: STOP light is on
- While running: When a: is exported, PUN light is bright, STOP is dark; Light on FWD, overturn on REV when transferring to.
- Runs →Stop: RUN light is bright, STOP flashes →RUN is dark, and STOP is on.
- Is rotating →Overturn: Bright, flash instead: Flashing, bright instead.
- When the frequency converter is operated in 0.00HZ, RUN light glimmer, STOP light goes out.
- inch when moving, RUN light on, and STOP glimmers.
- While stopping: STOP light is on
- While running: When a: is exported, PUN light is bright, STOP is dark; Light on FWD, overturn on REV when transferring to.
- Runs →Stop: RUN light is bright, STOP flashes →RUN is dark, and STOP is on.
- Is rotating →Overturn: Bright, flash instead: Flashing, bright instead.
- When the frequency converter is operated in 0.00HZ, RUN light glimmer, STOP light goes out.
- inch when moving, RUN light on, and STOP glimmers.

6.3 Operation Example



6.3.1 Comments: Show the content

- 1 F50.0 Output frequency 50.0Hz
- 2 F50.0 Establish frequency 50.0Hz
- 3 R02.0 Output the current 2.0A
- 4 U22.0 Output the voltage 220V
- 5 U54.0 DC 540V
- 6 F39.0 Temperature 39°C
- 7 0.001 Counter
- 8 L50.0 PID feedbacking 50%
- 9 000.0 Rotational speed
- 10 F 0 r Rotating
- 11 F E u Overturn

**6.3.2 Direct current pigeonhole, temperature, counter, PID feedback, rotational speed, is it can just show after setting for to need, concrete parameter can see C121 prove.**

**6.3.3 Show the interface content before cutting out while having the electricity**

**6.3.4 Under FOR, REV, CXXX and parameter content state, reply the interfaces, such as frequency, voltage, electric current, etc. automatically after several seconds.**

**6.3.5 Operating and stopping the state, still originally show interfaces, but the corresponding content will be**

**Changed according to the running situation, at the same time the state of the indicator lamp, point out the corresponding state. The fan runs while operating, the fan stops running when shutting down.**

**7. Trial Operation**

**7.1 The important check before running**

●Is there any wrong connected wires? Pay special attention to the terminals: U.V.W  
Make sure the power supply wires are connected to R.S.T not U.V.W.

- Is there any metal powder or other wires left on the base plate of the inverter or at the terminals?
- Is they're any looseness in the parts of screws and terminals?
- Is they're any short circuit or earth fault in the output parts?

**7.2 Trial operation procedures**

The digital operator can carry out trial operation.  
Generally, trial operation is done at 5.00 Hz.

Procedures	Data Display	Indicator
POWER ON ↓	F000	FOR STOP is on
Δ	00.00	FOR STOP is on
↓ ←Δ	05.00	FOR STOP is on
↓ RUN	F05.0	FOR RUN is on The fan operates
↓ STOP	F05.0	FOR STOP is on The fan operates

Note: The fan runs when temperature is reached within the type while operating, when the frequency converter shuts down, at dropping to 0.00HZ, STOP indicator lamp glimmer, on to stop the taillight from operation frequency

## 8. Function list

## Parameter and Function List (Part 1)

Function code	Function	Set range &function explanation	Factory Setting
C000	Main frequency	0.0~400.0Hz	0.00
C001	Accel. Time	0.1~6500S	5.0
C002	Decel. Time	0.1~65000S	5.0
C003	V/F Curve	0~16	00
C004	Max output voltage	0.1~255/510	220/400
C005	Base frequency	0.1~400.0	50/60
C006	Voltage at medium frequency	0.1~50	*
C007	Medium frequency	0.1~20.0Hz	*
C008	Voltage at lowest frequency	0.1~50	*
C009	Lowest frequency	0.1~20.0Hz	*
C010	Max operating frequency	50.0~400.0	50.00
C011	Frequency lower limit	0.0~*	0.00
C012	Run control select	0~2	0
C013	Frequency command method select	0~2	0
C014	Start mode	0~1	0
C015	Stop mode	0~1	0
C016	FOR/REV select	0~1	0
C017	“STOP” key definition	0~1	0
C018	S Curve	0~6500S	0
C019	Carrier frequency	0~15	09
C020	Starting Frequency	0.1~10	1.5
C021	Stopping Frequency	0.1~10	1.5
C022	Inch of frequency of moving is established	0~400	5.0
C023	Inch moving and establishing with moderating time	0~25	1.0
C024	PLC mode select	0~5	0
C025	Auto PLC select	0~3	0
C026	PLC running direction	0~255	0
C027	PLC Accel. / Decel. Time select 1	0~255	0
C028	PLC Accel. / Decel. Time select 2	0~255	0
C029	Accel. Time 2	0.1~6500S	10.0
C030	Decel. Time 2	0.1~6500S	10.0
C031	Accel. Time 3	0.1~6500S	50.0



C032	Decel. Time 3	0.1~6500S		50.0
C033	Accel. Time 4	0.1~6500S		100.0
C034	Decel. Time 4	0.1~6500S		100.0
C035	Multi-speed 2	0.0~400.0Hz		15.0
C036	Multi-speed 3	0.0~400.0Hz		20.0
C037	Multi-speed 4	0.0~400.0Hz		25.0
C038	Multi-speed 5	0.0~400.0Hz		30.0
C039	Multi-speed 6	0.0~400.0Hz		35.0
C040	Multi-speed 7	0.0~400.0Hz		40.0
C041	Multi-speed 8	0.0~400.0Hz		0.50
C042	PLC Timer 1	0.0~6500S		10.0
C043	PLC Timer 2	0.0~6500S		10.0
C044	PLC Timer 3	0.0~6500S		0.0
C045	PLC Timer 4	0.0~6500S		0.0
C046	PLC Timer 5	0.0~6500S		0.0
C047	PLC Timer 6	0.0~6500S		0.0
C048	PLC Timer 7	0.0~6500S		0.0
C049	PLC Timer 8	0.0~6500S		0.0
C050	Multi-input FOR	00:Invalid	20:Multi-speed1	02
C051	Multi-input REV	01:Run	21:Multi-speed2	23
C052	Multi-input RST	02:Forward run	22:Multi-speed3	10
C053	Multi-input SPH	03:Reverse run	23:Accel/Decel select1	17
C054	Multi-input SPM	04:Stop	24:Accel/Decel select2	18
C055	Multi-input SPL	05:Fow/rev run	25:UP function	19
		06:Jog	26:DOWN function	
		07:Forward jog	28:High speed count	
		08:Reverse jog	29:Timer 2 switch on	
		09:External emergency stop	30:Timer 1 switch on	
		10:Reset	31:Timer reset	
		12:Overheat	32:Timer	
		16:		
		17:High speed		
		18:Medium speed		
		19:Low speed		

<b>C056</b>	<b>Multi-output DRV</b>	00:invalid	14:finish indication for	01
<b>C057</b>	<b>Multi-output FABC</b>	01:run mode	single stage	02
		02:fault signal	15:finish indication for	
		03:zero speed	process	
		04:brake indication	16:counting arrival	
		05:up to setting frequency	27:drafting arrival	
		06:up to desired	28: hold	
		frequency1	29:pid upper limit alarm	
		07:up to desired	30:fan running	
		frequency2	31:reserver	
		08:in accelerating	32:braking resistor	
		09:in decelerating	action	
		10:inverter overload	32:braking resistor	
		11:motor overload	action	
13:under voltage				
<b>C058</b>	<b>Multi –Analog AM</b>	0~7		0
<b>C059</b>	<b>Analog output gain</b>	0~100		100
<b>C060</b>	<b>Up/down function select</b>	0~1		0
<b>C061</b>	<b>Up/down speed</b>	0~1		0
<b>C062</b>	<b>Timer 1</b>	0.0~100		00.0
<b>C063</b>	<b>Timer 2</b>	0.0~100.0		00.0
<b>C064</b>	<b>The counter is set up</b>	0~9999		0
<b>C065</b>	<b>The middle counter is set up</b>	0~9999		0
<b>C066</b>	<b>Skip Frequency 1</b>	0~*		0.0
<b>C067</b>	<b>Skip Frequency 2</b>	0~*		00.00
<b>C068</b>	<b>Skip Frequency 3</b>	0~*		0.0
<b>C069</b>	<b>Skip Frequency Range</b>	0.0~2.0		0.50
<b>C070</b>	<b>UP-to desired frequency1 setting</b>	0.0~*		00.00
<b>C071</b>	<b>UP-to desired frequency 2 setting</b>	0.0~*		00.00
<b>C072</b>	<b>Analog select</b>	0~4		0
<b>C073</b>	<b>Lower analog frequency set point</b>	0.0~*		00.00
<b>C074</b>	<b>Lower analog frequency bias select</b>	0~1		0
<b>C075</b>	<b>Higher analog frequency set point</b>	0.0~*		50.00
<b>C076</b>	<b>Higher analog frequency bias select</b>	0~1		0
<b>C077</b>	<b>Negative bias reverse select</b>	0~1		0
<b>C078</b>	<b>Analog quantity strains the wave constant</b>	0~50		20
<b>C079</b>	<b>Stall prevention select</b>	0~1		1
<b>C080</b>	<b>Stall prevention level during accel</b>	0~200		150
<b>C081</b>	<b>Stall prevention level during running</b>	0~200		000
<b>C082</b>	<b>Stall prevention level during decel</b>	0~200		180

C083	Over torque detection	0~200	000
C084	level Over torque detection time	0~20	01.0
C085	Rated voltage	*	220/380
C086	Rated current	*	*
C087	Motor poles	0~60	04
C088	Rated rotary speed	0~9999	1440
C089	The motor has no electric current in year	00~100	40
C090	Transfer to difference compensation and establish	0~1.0	0.000
C091	DC braking level	0.0~20.0	2.0
C092	DC braking time at starting	0.0~25.0	0.0
C093	DC braking time at stopping	0.0~25.0	0.0
C094	Speed search time	0.0~20.0	5.0
C095	Speed search current level	0~200	150
C096	Power loss allowable	0~1	0
C097	Allow power cut time	0.1~5.0	0.5
C098	Number of auto restart attempt	00~10	00
C099	Auto voltage regulation	0:Invalid1: Effective	1
C100	Auto energy saving	0.0~10.0	2.0
C101	Automatic province energy	0~10	0.0
C102	P	0~1000	100.0
C103	I	0.1~3600	5.0
C104	D	0.01~10	0.00
C105	Target Value	0.0~100	0.0
C106	Target Value	0~1	0
C107	Source PID Upper Limit	0~100	100
C108	PID Lower Limit	0~100	000
C109	Communication identified no	0~250	000
C110	Baud rate of communication	0~3	1
C111	Communication agree meat	0~5	0
C120	Factory setting	0~1	0
C121	Display mode select	0~15	000
C122	Type	*	*
C123	Specified voltage	Press aircraft type settlement	*
C124	Specified electric current	Press aircraft type settlement	*
C125	Countries	0~1	0/1
C126	Manufacture Date	Annual: Moon: Week	*
C127	Sequence Number	*	*
C128	Fault cleared		00

9. Detail Explanations of the Function

**C000 Main frequency**  
 Set range: 0.00—400.00Hz Unit: 0.01Hz  
 Factory setting: 0.00

In the digital operator method. The inverter will run at the setting value of C000. During running, users can press the ▲ or ▼ key to change the running frequency. During multi-speed running, the main frequency is the first speed frequency.

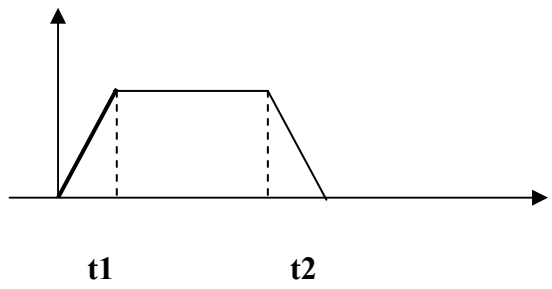
In the external terminals method. If C013 is set as 1, that is operation frequency is given definitely by the electric potential device. First section of speed is given definitely by the electric potential device or external electric potential device. Concrete conditions can jump by CN1 line choose Max limits Main frequency setting. Operating frequency.

**C001 Acceleration Time**  
 Set range: 0.1—6500.0S Unit:0.1S  
 Factory setting:5.0

**C002 Deceleration Time**  
 Set range:0.1—6500.0S Unit:0.1S  
 Factory setting:5.0

Accelerating Time means time needed for inverter frequency from 0Hz to 50Hz (See t1 in the diagram)  
 Decelerating Time means time needed for inverter frequency from 50Hz to 0Hz (See t2 in the diagram)  
 HLP-C Series of inverters have 4 accelerating time and 4 decelerating time.

F Acceleration time 2.3.4/ Deceleration time 2.3.4 can be controlled by on/off signal of external input terminals according to actual needs. In the inner-controlled multi-speed running, Accel/Decel time can be controlled by simple PLC.



**C003 V/F Curve**  
 Set range:016 Unit:.1 Factory setting:00

0:Wanton curve  
 1~16:16 curves are wanton and available  
 When C003 is set as 0, you can write the curve wantonly by yourself.

**C004 Max output voltage**  
 Set range:0.1—\* Unit:0.1V  
 Factory setting:220/400V

**C005 Base frequency**

Set range:0.01—400.00Hz      Unit:0.1Hz

Factory setting:50.00

**C006 Voltage at medium frequency**

Set range:0.1—500.0V      Unit:0.1V

Factory setting:15/27.5

This parameter can set any medium voltage in the V/F curve. If is it set improperly, it will cause motor over current or deficit torque, or even an inverter tripping.

This set value is limited by the Max voltage value.

**C007 Medium frequency set**

Set range:0.01—400.0Hz      Unit:0.01Hz

Factory setting:2.50

This parameter can set any medium frequency in the V/F curve. If users set improperly, it will cause motor over current or deficit torque, or even an inverter tripping.

This set value is limited by the base frequency.

**C008 Voltage at lower frequency**

Set range:0.1—50.0V      Unit:0.1V

Factory setting:8/13.5

This parameter sets the lowest starting voltage in the V/F curve.

The voltage at the highest operating frequency limits this set value.

**C009 Lowest frequency set**

Set range:0.1—20.00Hz      Unit:0.01Hz

Factory setting:0.50Hz

This parameter set the lowest starting frequency in the V/F curve.

**C010 Highest operating frequency**

Set range:50.00—400.0Hz      Unit:0.01Hz

Factory setting:50.00Hz

This parameter set the highest operating frequency of the inverter.

C006 C007 C008 C009 produce factory value relate to establishing value of C125 , when C125 is established as 0 , happen factory value first V/F curve content , C125 is it as one o'clock , happen factory value second curve content , C125 is established as 1 o'clock to establish, happen factory value second curve content , is it happen factory at the value, content the same memory has to resume.

**Note:** \*Number is worth or has many kinds of settlement value for being uncertain

**C011 Frequency lower limit**  
 Set range : 0.00—400.00Hz Unit:0.01Hz  
 Factory setting : 0.00Hz

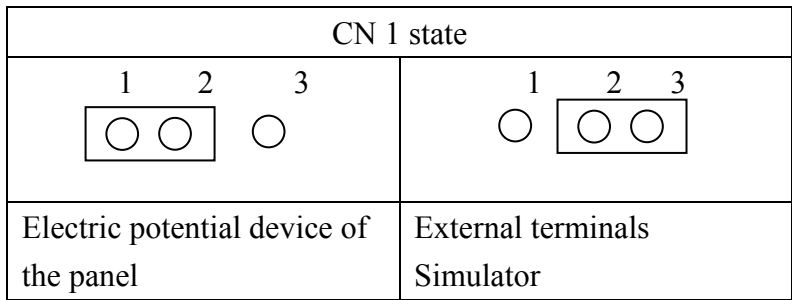
This is set for preventing workers from false operation, avoiding overheats or some other mechanical faults caused by the too low running frequency.  
 This set value must be lower than the frequency upper limit.

**C012 Control Mode Select**  
 Set range:0—2 Unit:1 Factory setting:0

- 0: meaning control by digital operator**  
 Digital operator gives the running command.
- 1: Meaning control by external terminals**  
 The run command is given by external terminals (multi-function input terminals).
- 2: Meaning control by the communications**  
 The running command is given by the communications.

**C013 Command Method Select**  
 Set range:0—2 Unit:1 Factory setting:0

- 0: Set by digital operator**  
 The digital operator sets the running frequency.
- 1: Set by external terminals**  
 The running frequency is controlled by the analog signal through external terminals. Relate to CN1 state



- 2: Set by the communications**  
 The running frequency is set by serial communications.

**C014 Starting method select**

Set range: 0—1                      Unit: 1                      Factory setting: 0

Two starting methods are available for different equipment.

**0: means start from the starting frequency**

When C092 is set for “0.0” (meaning: DC brake is invalid), it starts at its starting frequency.

When C092 is set for any other parameters except “0.0” (meaning: C brake is valid), it will first have a DC braking at the beginning, and then start from the starting frequency.

Related setting refer to C091、C092.

**1: means start by former speed search**

This function can be used in the re-starting of large inertia equipment. When re-starting, the inverter searches the former speed from set. And when restarting, it's not necessary to wait for the equipment's complete stop any more and it can run the executive command right away by doing the former frequency track and save a lot of time.

**Note: When the inverter makes a track starting, it will start tracking the frequency from its set frequency, and will make it at the highest speed. When starting, the current will be high, and over current or stall may appear, woo the adjustment for current standard position of speed search is important. Generally, C095 should be set around“100”. The specific value should be set according to actual situation.**

**C015 Stop method select**

Set range: 0—1                      Unit: 1                      Factory setting: 0

Two stop methods are available for meeting different equipment.

**0: Means decelerate to stop**

When C093 is set for “0”, C brake is invalid. When C brake is invalid, the inverter will decelerate to the stopping frequency, and then stop output, and then the motor will have a free running to a final stop. When C093 is set for any other parameter except “0”(meaning the C brake is valid), the inverter will first decelerate to the stopping frequency, and then stop finally by C brake.

The DC brake is usually used in high position stopping or for location control. Special attention should be paid that frequent uses of C brake will cause the motor overheat.

Related setting refer to C091、C093。

**1: Means free-running stop**

When the inverter receives a “stop”command, it will immediately stop output and the motor will have a free running till a stop. When you choose the motor free-running stop method, DC brake is invalid.

**C016 Selection for For/Rev Run**

Set range: 0—1                      Unit: 1                      Factory setting:

**0: Forward Run only. Reverse Run is forbidden.**

**1: Reverse Run is available.**

This function is suitable for the motor, which cannot have reverse rotation. It prevents workers from false operation. When the reverse rotation is forbidden, the motor will not have reverse rotation, only forward rotation.

**C017 “Stop” key valid or not**  
 Set range: 0—1      Unit: 1      Factory setting: 1

**0: the command of STOP is invalid.**

**1: the command of STOP is valid.**

This parameter set is only valid when CD033 is set for lor2.

When the control method is set external terminals or communications, the “stop” key can be chosen to be valid or not. When you choose it as valid, the “stop” key can stop the inverter in running. When it needs restarting, the former running signal should be released first and then restarting is allowable.

**C019 Carrier frequency(Note:0—15 corresponding to 0—16K Hz)**  
 Set range : 0—15      Unit : 1      Factory setting : 05

The carrier frequency will affect the electromagnetic noise of the motor, the heating capacity of the inverter and the interference with the environment. See the following table :

Carrier frequency	Electromagnetic noise	Heating capacity	Interference to the environment
Low ↓ High	Loud ↓ Low	Small ↓ Large	Little ↓ Strong

Carrier frequency corresponding table :

Set value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Carrier frequency	1.5	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

From the table above, we can see that with a high carrier frequency, the electromagnetic noise will be lower, but the interference to other systems and the heating capacity will be charger. So if the inverter is in a high temperature working space with heavy motor load carrier frequency should be properly lowered to reduce the heating capacity.

**C020 Starting frequency**  
 Set range: 0.1—10.0Hz    Unit : 0.1Hz    Factory setting : 1.5

Starting frequency is the initial frequency when the inverter begins to work. If the starting frequency is set for 4.0Hz, the inverter will begin to run at 4.0Hz, and later on running between 0.1Hz and its Max operation frequency. (The practical highest operation frequency is confined to the lower/upper limit of the frequency).



**C021 Stopping frequency**

Set range : 0.1—10.0 Hz      Unit : 0.1Hz      Factory  
setting : 1.5

When the inverter receives a stop command, it will immediately decelerate to the stopping frequency, stop output or start DC brake to a final stop.

If C093 is set for “0”, DC brake is invalid when stopping and the inverter will stop output.

If C093 is set for any other parameter except “0”, DC brake is valid; the inverter will stop by DC braking.

**C022 Inch moves frequency of establishing**

Set range : 0.1—400.0 Hz      Unit : 0.1      Factory  
setting : 5.0

The parameter can realize point-running function when debug inverter at beginning, the operation can do only by external terminals. Point-running frequency is confined to the lower/upper limit of the frequency. While point-running function is doing, other run command is invalid.

The accelerate time of point-running frequency is settled by C023.

This function is only valid at stop condition, it is invalid at running. When C012 is set for “1”, it is valid.

**C023 Inch works up and adds and moderates time to establish**

Set range : 0.1—25.0Hz      Unit : 0.1      Factory  
setting : 1.0

It is limited by the adds and moderates time of 0~50 Hz.

**C024 PLC operates and chooses**

Set range : 0—5Hz      Factory setting : 0

0: Normal working the Inverter is normal working

1: Four section run by external terminals control (refer to C050~C055)

2: Multi-speed

**C025 Auto PLC Run and choose**

Set range : 0—3Hz      Factory setting : 0

**C026 PLC Operate in the direction and choose**

Set range : 0—255Hz      Factory setting : 0

**C027 PLC adds and moderates time to choose one**

Set range : 0—255Hz      Factory setting : 0

**C028 PLC adds and moderates time to choose two**

Set range : 0—255Hz      Factory setting : 0

**C029 Accel.Time 2**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:50.0

**C030 Decel.Time 2**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:50.0

**C031 Accel.Time 3**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:100.0

**C032 Decel.Time 3**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:100.0

**C033 Accel.Time 4**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:200.0

**C034 Decel.Time 4**  
 Set range:0.1—6500.0s Unit:0.1s Factory setting:200.0

<b>C035 Frequency set 2</b>	Factory setting:15.0
<b>C036 Frequency set 3</b>	Factory setting:20.0
<b>C037 Frequency set 4</b>	Factory setting:25.0
<b>C038 Frequency set 5</b>	Factory setting:30.0
<b>C039 Frequency set 6</b>	Factory setting:35.0
<b>C040 Frequency set 7</b>	Factory setting:40.0
<b>C041 Frequency set 8</b>	Factory setting:0.50
Set range: 0.0-400.0HZ Unit: 0.1HZ	

<b>C042 PLC Timer 1</b>	Set	Factory setting10.0
<b>C043 PLC Timer 2</b>	Set	Factory setting10.0
<b>C044 PLC Timer 3</b>	Set	Factory setting0.0
<b>C045 PLC Timer 4</b>	Set	Factory setting0.0
<b>C046 PLC Timer 5</b>	Set	Factory setting0.0
<b>C047 PLC Timer 6</b>	Set	Factory setting0.0
<b>C048 PLC Timer 7</b>	Set	Factory setting0.0
<b>C049 PLC Timer 8</b>	Set	Factory setting0.0
Set range: 0.0-6500S Unit: 0.1S		

Related setting : C024 C025 C026 C027 C028

<b>C050.Multi-function Input Terminal1 (FOR)</b>	Factory setting:02
<b>C051.Multi-function Input Terminal2 (REV)</b>	Factory setting: 03

<b>C052.Multi-function Input Terminal3 (RST)</b>	Factory setting: 10
<b>C053.Multi-function Input Terminal4 (SPH)</b>	Factory setting: 17
<b>C054.Multi-function Input Terminal5 (SPM)</b>	Factory setting: 18
<b>C055.Multi-function Input Terminal6 (SPL)</b>	Factory setting: 19
Set range : 00—32      Unit : /	

00:Invalid terminal      Empty terminal, avoid false operation.

01:Run. be able to make up multiple control methods combining with other terminals.

02:Forward rotation

03:Reverse rotation

04:Stop

05:FOR/REV shift/switch

06:Jog

07:Jog FOR Rotation

08:Jog REV Rotation

09:Emergency stop As soon as external emergency stop or other fault signals.

10:Reset The inverter can be reset using this terminal after the fault is solved is received.

The inverter will Decel. Time stop.

12:Overheat of the heat sink or motor

Users can check whether there is overheat in the heat sink or the motor using this function.

16:Reserved

17:High speed These three speeds provide three different running patterns in

18:Medium speed different frequencies. In theist terminals, always the high

19:Low speed point signal is the priority one.

The low, medium and high speeds are determined by the second, the third and the fourth frequency.

20:Multi-speed 1

21:Multi-speed 2

22:Multi-speed 3

These three can provide seven different speeds.

23:Acceleration or Deceleration Time Select 1

24:Acceleration or Deceleration Time Select 2

The acceleration or deceleration time of the inverter can be selected by these terminals. Altogether 4 patterns are available.

25:UP

Every single press on these keys will make the inverter frequency setting go up or down for one unit.

While if either key is kept pressing, the frequency value will swiftly go up or down continuously. If recovery occurs after power loss, the former frequency you set doesn't t waist any more.

26:DOWM

27:PID Enable

Open PID Function starts to run when it receives the starting command.

28:hold

29:Timer 2 set

30:Timer 1 set

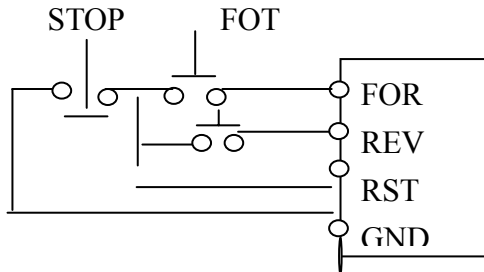
31:Counter Reset

Pressing this key will clean up the former display data and recover to CXX and be able to count for the next.

32. Counting device: Counter It can receive pulse signal( $\leq 250\text{Hz}$ )and count the numbers

**Note.**

**a. Three-lines system connection using RUN. STOP .DCM**



1) Using multi-function terminals FOR and REV

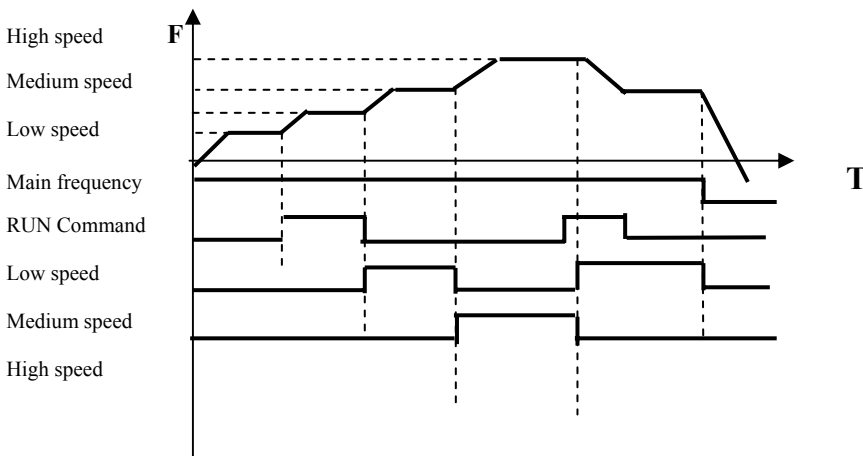
2) Parameter setting: C050=02      C051=03  
                                  C052=04      C012=1

**b · Introduction of the acceleration or deceleration time select One and Two.**

1. This function is only valid when CD076 is set for“0.1or 2”. When in disturbance and inner control multi-control speed method it is invalid.
2. Any two multi-function input terminals can make up 4 patterns of acceleration or deceleration time.
3. Take the SPH.SPM terminals as an example. When CD053 for SPH is set for “23”, and CD054 for SPM is set for “24”, the four acceleration or deceleration patterns are shown in the following table.

SPH terminal	SPH terminal	Results
OFF	OFF	The first acceleration or deceleration time
ON	OFF	The second acceleration or deceleration time
OFF	ON	The third acceleration or deceleration time
ON	ON	The fourth acceleration or deceleration time

**d · Introduction of high speed, medium speed and low speed terminals**

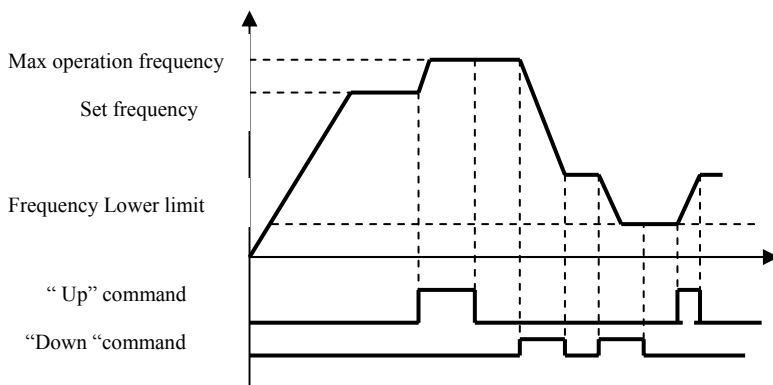


RUN	SPL terminal	SPM terminal	SPH terminal	Results
ON	OFF	OFF	OFF	Main speed and the run frequency are determined by C000.
ON	ON	OFF	OFF	Main speed and the run frequency are determined by C035.
ON	ON/OFF	ON	OFF	Main speed and the run frequency are determined by C036.
ON	ON/OFF	ON/OFF	ON	Main speed and the run frequency are determined by C037.

**Note :**

- 1. This function is only valid when C024 is set for“1”(i. e. in external control four speed)**
- 2. The frequency of low speed, medium speed and high speed are determined by the second, third, fourth frequencies.**
- 3. The acceleration or deceleration time is controlled by the acceleration or deceleration selection terminals.**
- 4. When multiple signals are received, it will have the priority from the high to the low.**

**e : UP/DOWN terminals**



UP	DOWN	RESULTS
ON	OFF	Frequency up
OFF	ON	Frequency down
ON	ON	Neither up nor down

**Note:**

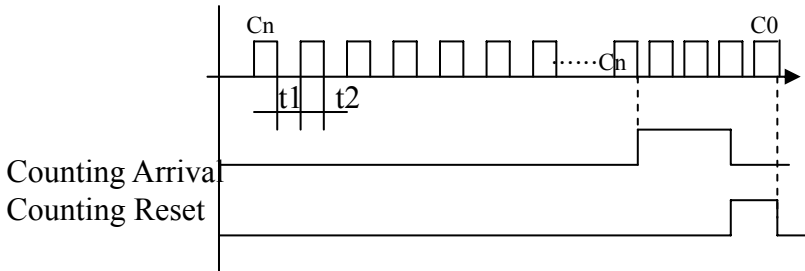
- 1. UP/DOWN functions are only valid when the command method is set by digital operator(i.e. C013 is set for “0”)**
- 2. If the UP terminal is closed, the inverter output frequency will gradually increase.**
- 3. If the DOWN terminal is closed, the inverter output frequency will gradually decrease.**
- 4. If the UP and DOWN terminals are closed at the same time, the frequency will not increase or decrease**
- 5. When the frequency reaches its highest operation frequency, it will not go up any more.**
- 6. When the frequency reaches its lowest operation frequency or its lower limit, it will not go down any further.**
- 7. If a momentary power loss occurs, the former frequency will not be remembered by the inverter and it will recover to its original C000.**

8. Using UP/DOWN functions, Can through settlement mode and speed of UP-DOWN of C060 and C061 , as shown in C060 , C061.
9. Press the UP or DOWN terminals continuously, the frequency will swiftly go up or down.
10. UP, DOWN are valid while running, can't change frequency in a waiting the opportune moment.

**f · Multi speed 1.2.3.**

This function is only valid when C024 is set for “2”. Related introduction refer to C024

**g : Counting**



Note:

1. Trigger signal width mustn't be lower than 2mSec ( t1 、 t2 ≥ 2mSec )
2. When the counter arrives at its setting value, the corresponding multi-function output contact act
3. The counter cannot do a new counting until it is reset.
4. Multi-function Output Three ( FA 、 FB 、 FC terminal )

<b>C056 Multifunction Output DRV terminal</b>	Factory setting 01
<b>C057 Multifunction Output FA 、 FB 、 FC terminal</b>	Factory setting 02
Setting range : 00—32      Unit : 1	

**00:No function**

This is only for preventing false operation.

**01:running**

The contact will act when the inverter is in running or receiving running command signals.

**02:fault signal**

The contact will act when the inverter detected default.

**03:zero speed**

When the inverter output frequency is lower than its starting frequency.

**04:DC brake indication**

The contact will act when the inverter is in DC braking condition.

**05:Up to set frequency**

The contact will act when the output frequency has reached the set frequency.

**06:Up to Want on frequency1**

The contact will act when the output frequency has reached the desired frequency (C070).

**07:Up to Want on frequency2**

The contact will act when the output frequency has reached the desired frequency(CD071)

**08:on accelerating**

The contact will act when the Inverter is accelerating.

**09:on decelerating**

The contact will act when the inverter is decelerating.

**10:overload alarm**

The contact will act when the Inverter detected overload fault.

**11:Motor overload alarm**

The contact will act when the inverter detected motor overload fault.

**12:Over torque alarm**

The contact will act when the inverter detected over torque.

**13:Under voltage alarm**

The contact will act when the inverter detected under voltage fault.

**14:Single stage end**

The contact will act when the Inverter has finished a single stage in its program running.

**21:Fan run**

When the inverter is working in high temperature or in running, this contact will act.

**22:MCB run**

**23:Braking resistor**

When the inverter is running and the DC voltage reaches its brake voltage, this contact will act.

**25: PID Lower alarm**

This contact will act when the PID feedback quantity is lower than the lower limit.

**26:PID Upper limit alarm**

This contact will act when the PID feedback quantity is larger than the upper limit.

**27:The fine gentry is over**

When draft movements are finished, this contact movement. When the frequency converter stops, reset automatically in this contact.

**29:Timer 1 arrival**

Should be exposed to some movements when the timer reaches the establishing value.

**30:Timer 2 arrival**

**31:Middle Counting arrival**

The contact will act when the internal counter has reached the setting value (C065)

**32:Counting arrival**

The contact will act when the internal counter has reached the setting value (C064)

**C058 Multi-function output AM**  
 Set range:0—7      Unit:1      Factory setting:0

Function: Analog frequency output terminal, output 0-10V.It can be joined together with CD071 for external monitoring if connected to a frequency meter with a measuring range of 10V or below.

**0: Invalid**

**1: Output frequency**

**2: Output current (0—10V)**

**3: DC voltage (0—10V)**

**4: Output voltage(0—10V)**

**5、6、7:Invalid**

**C059 Simulation end AM exports and gains establishing**  
 Set range: 0—100%      Factory setting: 10%0

This setting can adjust the output voltage of the multi-function output terminals to adapt to the frequency meters with different measuring ranges and also it can help adjust the frequency meters according to this parameter.

Exp. if the frequency meter’s measuring ranges is 0-5v,C060 can be set for “50”.

Prompt: please sleect the frequency meter’s measuring ranges of 10V or below.

**C060 UP-down**  
 Set range:0—1      Unit:1      Factory setting:0

**0: Recorded**

**1: non-recorded**

This setting can decide whether the new setting frequency modified by up/down function will be recorded or not. If C060 is set for 0, then the new value will be recorder and when the inverter is re-started, the new data will be valid

**C061 Up-Down speed**

Set range: 0—1      Unit: 1      Factory setting: 0  
 0: 0.1Hz      From slow to fast, increase and decrease at the uniform velocity successively  
 1: 0.1Hz      Increase and decrease at the uniform velocity (relatively slow speed)

**C062 Timer 1**  
 Set range: 0—100      Unit: 1      Factory setting: 0  
**C063 Timer 2**  
 Set range: 0—100      Unit: 1      Factory setting: 0

Parameter this is it can change up-down increase and decrease speed, in order to meet different need of customer to establish. When frequency is in above 100Hz, frequency is increased and decreased at the uniform velocity with unit 1Hz.

**C064 Counter value establishing**  
 Set range : 0—9999      Unit : 1      Factory setting : 0

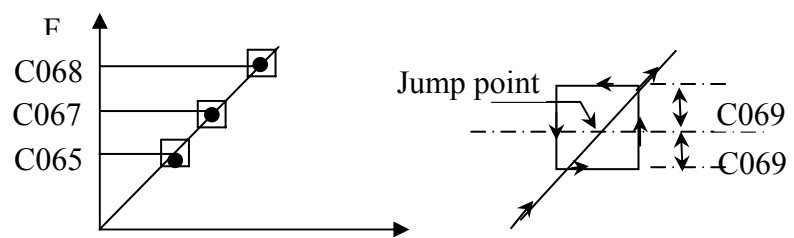
The counter can be regarded as the trigger by many functions outside end sons, when counter value reaches establishing value C064, corresponding many function output contact movement, after putting by counter, counter put the location, count and resume, touching off the signal can be utilized and close to the switch, photoelectric switch, etc.

**C065 The middle counter establishing**  
 Set range : 0—9999      Unit : 1      Factory setting : 0

Pay respects to it prove C064, establish with C064

**C066 Skip frequency 1**  
**C067 Skip frequency 2**  
**C068 Skip frequency 3**  
 Set range : 0.00—400.00 Hz      Unit : 0.01Hz  
 Factory setting : 0.0

**C069 Skip frequency range**  
 Set range : 0.10—2.00 Hz      Unit : 0.01Hz  
 Factory setting : 0.5



In order to avoid meeting the mechanical resonance point, these three skip points are set. When C069 is set for “0”, all the set skip frequencies are invalid; the practical skip frequency range is twice as large as that of C069. Shown as above.

**C070 Up to desired frequency 1 setting**  
**C071 Up to desired frequency 2 setting**



Set range:0.00—\*\* Unit:0.01Hz Factory setting:0.00

**C072 Analog input select**  
Set range : 0—4 Factory setting : 0

**0:0~10V 1:0~5V 2:0~20mA 3:4~20mA**  
**4:both 0-10V and 4-20mA**

This parameter setting can meet different analog input signals.  
When C073=4, output frequency= (U / Umax + I / Imax)×C075  
U: Analog Voltage Umax: Max Analog Voltage  
I : Analog Current Imax: Max Analog Current

**C073 Lower analog frequency set point**  
Set range : 0.00—400.00 Hz Unit : 0.1 Hz  
Factory setting : 0.0  
**C074 Low analog frequency bias direction**  
Set range : 0—1 Factory setting : 0

**0: Positive direction**  
**1: Negative direction**

**C075 Higher analog frequency set point**  
Set range : 0.00—400.00 Hz Unit : 0.01Hz Factory setting : 50.00  
**C076 Higher analog frequency bias direction**  
Set range : 0—1 Factory setting : 0

**0: Positive direction**  
**1: Negative direction**

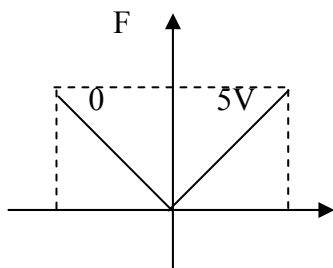
**C077 Negative bias reverse selection**  
Set range : 0—1 Factory setting : 0

**0:Negative bias reverse is invalid.**  
**1:Negative bias reverse is valid.**

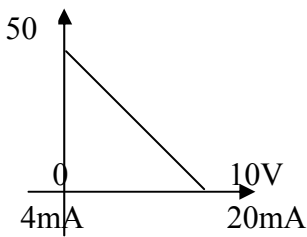
This parameter group can set the measuring range and zero point of the external. Analog terminals and also can build and curve to control the motor running.

For example :

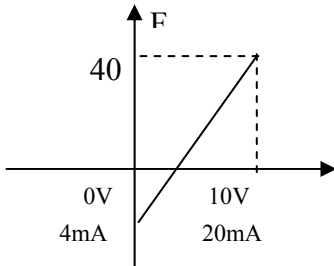
Reverse rotation area 50 Hz Forward rotation area



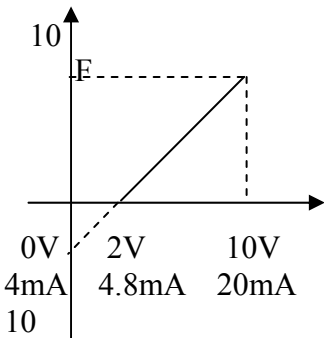
C073=50  
C074=1  
C075=50  
C076=0  
C077=1



C073=50  
 C074=0  
 C075=0  
 C076=0



C073=10  
 C074=1  
 C075=40  
 C076=0  
 C077=1



C073=10  
 C074=1  
 C075=40  
 C076=0  
 C077=0, 2V-10Vavailability, 0V-2Vnullity

**C078 Analog quantity strains the wave constant**  
 Set range : 0—50 Hz    Unit : 1    Factory setting : 20

**C079 Stall prevention select**  
 Set range : 0—1    Unit:1    Factory setting : 1

**0: The function of stall prevention is invalid.**

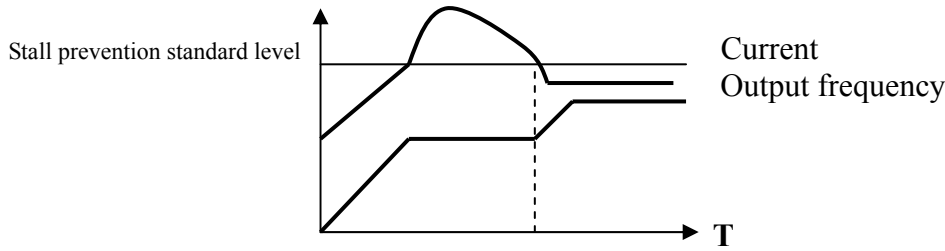
**1: The function is valid.**

When the inverter is in decelerating, because of the effect of load, the motor will produce a return energy to the inverter and cause the DC side voltage of the inverter increase. So when the function of over voltage stall prevention is set valid and the DC voltage of the inverter becomes too high, the inverter will stop decelerating till the DC side voltage decreases to its rated value, and then the inverter will go on to execute deceleration and of course the deceleration time will be elongated.

**C080 Stall prevention level during acceleration**

Set range : 0—200%    Unit : 1%    Factory setting : 150

When the inverter is in accelerating, because of over load or too short acceleration time, the output current of the Inverter will go up quickly and exceed the rated standard level. When this happens, the inverter will stop accelerating, until the current returns under its rated value will the inverter go on to accelerate.

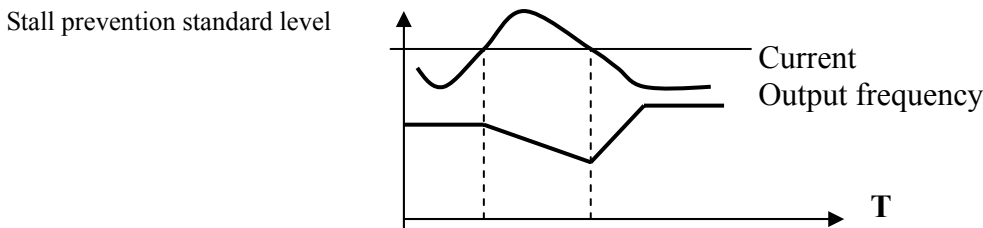


100% current is the motor rated current. If this parameter is set for “0”, stall prevention function is invalid.

**C081 Stall prevention level during running**

Set range : 0—200%    Unit : 1%    Factory setting : 0

When the inverter is in constant running, because of load fluctuation and some other reasons, the current will go up. When the current exceed its rated value, the inverter will lower the output frequency. When the output current returns to its normal range the inverter will accelerate to its set frequency again.



100% current is the motor rated current.  
If this parameter is set for “0”, stall prevention function is invalid.

**C082 Stall prevention level during decelerating**

Set range 0—200%    Unit : 1    Factory setting : 180

Related introduction refer to C079

This parameter is established as 0, the stall prevents the function from being invalid.

**C083 Over torque detection level**

Set range : 0—200%    Unit : 1%    Factory setting : 0

When the output current exceeds the over torque detection level and also exceeds half of the over torque detection time (factory setting: 1.0s), the over torque detection will begin to work, and the corresponding multi-function contact will act. When it exceeds the set time value, the inverter will turn into self-protection. But when this parameter is set for “0”, the over torque detection will be invalid

**C084 Over torque detection time**

Set range:0.1—20.0s    Unit:0.1s    Factory setting:1.0

When the inverter detects that the output current has exceeded the motor current set value, the inverter begins to calculate the over torque time. When the over torque time has exceeded half of the over torque detection time, the corresponding multi-function output contact will act, the over torque warning will be produced, while the inverter will continue running. When the over torque time has exceeded the set detection time (set by C083), the inverter will turn into self-protection, display the fault signal and stop output.

Related introduction refer to C083.

**C085 Rated voltage**  
Unit:0.1V                      Factory setting:\*

Set according to the rated voltage shown on the nameplate of the motor .The factory setting for 230-v class inverters is 220, for 440-v class inverters is380.

**C086 Rated current**  
Unit:0.1A                      Factory setting:\*

Set according to the rated current shown on the nameplate of the motor. With this parameter users can limit the inverter output current, prevent over current, and protect the motor. If the motor current exceeds this set value, the inverters will turn into self-protection.

**C087 Motor Poles**  
Set range : 02—10              Unit:1              Factory setting : 04

This parameter should be set according to the motor nameplate.

**C088 Rated rotary speed**  
Set range : 0—9999              Unit:1r/min              Factory setting : 1440

This should be set according to the practical motor rotating speed. The display value is the same as this parameter. It can be used as monitoring parameter, which brings convenience for users to monitor the running state. This parameter set value is corresponding to the rotating speed at 50Hz.

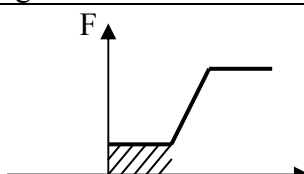
**C089 The motor has no electric current in year**  
Set range : 0—99              Factory setting : 40

**C090 Transfer to difference compensation and establish**  
Set range : 0.0—10.0              Factory setting :

**C091 DC braking level**  
Set range : 0.0—20.0%              Unit : 0.1%              Factory setting : 2.0

This setting determines the DC brake voltage of the motor when starting or stopping. Adjustments of increase the parameter value slowly until it gets enough brake torque. 100% voltage is the out voltage at Max frequency.

**C092 DC braking time at starting**  
Set range : 0.0—25.0S              Unit : 0.1S              Factory setting : 0.0



C041

T

C041

This setting determines the DC Braking lasting time during DC brake at starting. If it is set for “0” it means DC brake is invalid.

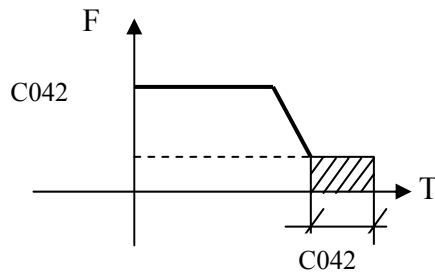
The DC brake at starting is usually used in the cases in which the load is movable in the “stop” state. Such as cooling fan and some other machines. Because of the load, the motor is always in a free running state, with an uncertain running direction.

Users can first start the DC brake before starting the inverter to prevent the motor from tripping. This setting is valid only when C014 is set for “0”. Related introduction refer to C014.

**C093 DC braking time at stopping**

Set range : 0.0—25.0 Unit : 0.1S

Factory setting : 0.0



Note:

This setting determines the DC braking time at stopping when it is not set for “0”. The DC brake at stopping is usually used in high point shutdown or for location control.

This setting is valid only when C015 is set for “0”. Related introduction refers to C015.

**C094 Speed search time**

Set range : 0.1—20.0S Unit : 0.1S Factory setting : 2.0

This parameter is set as speed search time when the inverter restarts by the speed search method after solving the external faults or a momentary power loss. For the starting and stopping of some large inertia load, because of its large inertia, if users restart the machine after its complete stop, it will waste much time. But after starting the speed search function, things are different. You needn’t wait for the machines fully stop, the inverter will make a frequency tracking from high to low at its set frequency. After tracking it will continue to accelerate to reach the set frequency.

**C095 Speed search current level**

Set range : 0—200% Unit : 1% Factory setting : 150

When the inverter is making a speed search, the output current takes this set value as its standard level. When the output current is higher than this standard level, the frequency will decrease to make the current return to its normal range and then execute the command of speed search again.

**C096 Restarting select after a momentary power loss**

Set range : 0—1 Unit:1 Factory setting : 0

**0: invalid** i.e. no auto restarting after a momentary power loss  
**1:restart by speed search** Related introduction refer to C094

**C097 Momentary power loss ride through time**

Set range : 0.1—5.0S      Unit : 0.1S      Factory setting : 0.5

This setting determines the longest time allowable for momentary power loss. If it exceeds the allowable time, the inverter will still be in a stop state after the power recovery occurs. If users want to restart the inverter, you need to follow the normal starting steps again.

**C098 Number of auto restarting attempt**  
Set range : 00—10      Unit : 1      Factory setting : 00

When meeting abnormal situations such as over current, over voltage, etc, the inverter will have an auto reset and restart itself. If the starting method is set as normal starting, the inverter will start in the normal method. If the starting method is set as speed search starting, the inverter will start

in the speed search method. After restarting, if meeting no new abnormal situation, the parameter will return to its set value again. If meeting new abnormal situations again and again, and reaching the Number of auto restarting attempt, the inverter will stop output. Only after reset can the inverter restart again. If C098 is set for “0”, the inverter will not have auto reset and restart function in abnormal situations.

**C099 Auto voltage regulation**  
Set range : 0—1      Factory setting : 1

**0: invalid      1: valid**

Under the situation of unstable power supply, if the voltage is too high and the motor is running at a higher voltage than it’s rated, this will cause the motor temperature increase, the insulation is destroyed and output torque unstable. The auto voltage regulation function can keep the output voltage within the rated motor voltage.

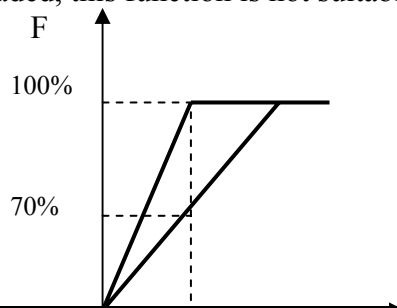
When this function is set for “0” there will be fluctuation of the output voltage.

**C100 The automatic torque compensating**  
Set range : 0.1—10.0%      Unit : 0.1%      Factory setting : 2.0

**C101 Auto energy saving**  
Set range : 0—20%      Unit : 1%      Factory setting : 0

If this parameter is set for “0”, the energy saving function is invalid. In auto energy saving, it will run at its full voltage when accelerating or decelerating; when in constant running

It will run at the best voltage value which is auto calculated by the load power and thus reach the purpose of energy saving. The Max energy saving rate can reach 30% But for those have frequency load changes or are almost full loaded, this function is not suitable.



**C102 PID Constant : P**  
Set range:0.0~1000%      Unit:1      Factory setting:100

This setting determines the error value gain. If I=0,D=0,it is only for proportion control.

**C103 PID Constant : I**  
Set range:0.1~3600      Unit:1      Factory setting:5.0

This setting determines the reaction speed for PID.

The larger the I value is the slower the reaction speed is. But if the integral time value is set too small, it will cause vibration.

**C104 PID Constant : D**  
 Set range: 0.1~10.0    Unit: 0.1    Factory setting: 0

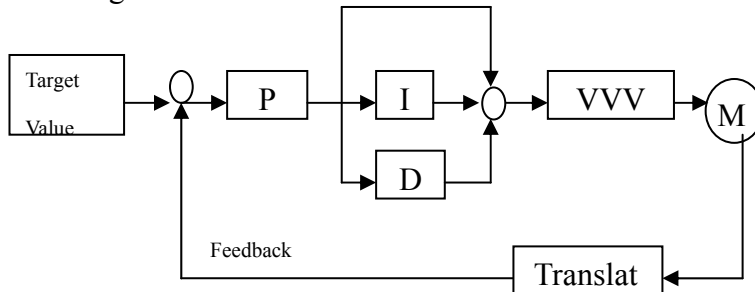
This setting determines the depression operation of PID.  
 The larger the D value is, the more obvious the depression operation is. When D is set for “0”, it means this function invalid.

**C105 PID Constant Target Value**  
 Set range:0.1 ~100.0    Unit:0.1    Factory setting:0.0

The target value can be set through external voltage signal or the digital operator. 100% target value is corresponding to the frequency at quantity +10V.  
 PID closed-loop control is usually used in the control of processed of no fast physical quantity changes, such as pressure control, temperature control, etc. The feedback signal is usually taken from temperature, or pressure translator, etc. When under PID control, the feedback signal input path is the analog current signal 4-20mA.

PID closed-loop control is valid only when the multi-function inputs PID are open.

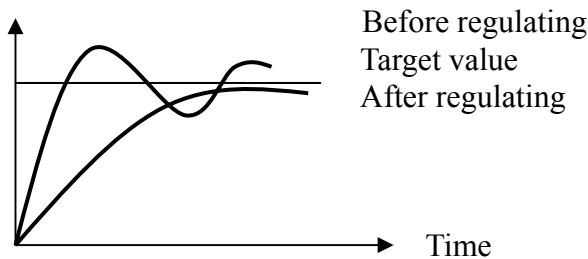
PID Control Diagram:



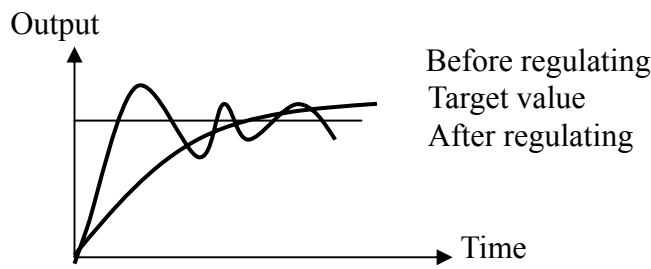
General operating methods of PID control:

- (1) Choose the correct translator (with output specification of standard current signal 4-20mA)
- (2) Set the right target value.
- (3) If the output doesn't have oscillation, increase the proportional constant (P);
- (4) If the output doesn't have oscillation, decrease the integral time (Ti);
- (5) If the output doesn't have oscillation, increase the differential time (Td);
- (6) Application Examples as follows:

Output



1. Decrease the Over Output
  - a. Decrease the differential time (D)
  - b. Increase the integral time (I)



- 2. Decrease the oscillation
  - a. Decrease the differential time (D) or set it for “0”
  - b. Decrease the proportional constant (P)

**C106 PID Target Value Source**  
 Set range: 0~1                      Unit: 1                      Factory setting: 0

The target value can be set through the digital operator and the external analog signals.  
 When C106=0, the target value of PID is set by C105.  
 When C106=1, the target value of PID is set by external analog signal 0-10V (corresponding 0-100%), the setting of C105 is invalid.

**C107 PID Upper Limit**  
 Set range: 0~100 %                      Unit:                      Factory setting: 100%

When the PID feedback value is higher than the setting of C105, the corresponding multi-function output contact will be energized. The machine will not stop working.

**C108 PID Lower Limit**  
 Set range: 0~100%                      Unit:                      Factory setting: 0%

When the PID feedback value is lower than the setting for CD156, the corresponding multi-function output contact will be energized. The machine will not stop working.

**C109 Communication identifier no**  
 Set range: 00~250                      Unit: 1                      Factory setting: 00

When the inverter is set to RS-485 Communication control. The inverter will be set an individual identified no.

- 00: no communication function**
- 01~250: inverter individual identified no.**

**C110 Communication Baud rate**  
 Set range: 0~3                      Unit: 1                      Factory setting: 1

- 0: 4800 Bit/Sec                      1: 9600 Bit/Sec**
- 2: 19200 Bit/Sec                      3: 34800 Bit/Sec**

**C111 Communication Data Method**  
 Set range: 0~5                      Unit: 1                      Factory setting: 0

- 0: 8.N.1 For ASC II                      1: 8.E.1 For ASC II**
- 2: 8.O.1 For ASC II                      3: 8.N.1 For RTU**
- 4: 8.E.1 For RTU                      5: 8.O.1 For RTU**

**HC1-C MOBUS communication protocol**

When we use inverter with RS485 communication interface each of inverter must set address of in oneself the computer can use this address to control the inverter.

**1: communication protocol has two modes**



- 1) RTU mode (Remote Terminal Unit)
- 2) ASC II mode (America Standard Code for information interchange) information of code.

RTU mode:

Each of 8-bit data is composed of two 4-bit data, for example: 64H

ASC II mode:

Each of 8-bit data is composed of two ASC II byte, for example:

64H(hexadecimal) is composed of ASC II byte "64", included "6"(36H) and "4"(34H).

**2: Communication data mode**

**3: Communication data format**

3.1 ASC II mode

Communication data format

STX “:” (3AH)	ADDR	FUNC	LEN	DATE (n-1)···DARA <sub>0</sub>	CRC	END CR (0DH) LF (0AH)
---------------------	------	------	-----	-----------------------------------	-----	-----------------------------

- 1) STX: start data “:”(3AH)
- 2) ADDR communication address, 8-bit data is composed of two ASC II byte.
  - 00: broadcast for all inverter
  - 01—250: communication with inverter of the address
- 3) FUNC: function code, 8-bit data is composed of two ASC II byte.
  - 01: read the data of function code
  - 02: write the data of function code
  - 03: write control data
  - 04: read control status data
  - 05: write inverter frequency data
  - 06: keep
  - 07: keep
  - 08: loop test

**a. Read function code data**

format:

ADDR 01 LEN FUNC DATA

ADDR=0 means no answer

ADDR=1-250 reply from inverter of this address

When inverter reply normal, format as follows

ADDR 01H LEN FUNC DATA

If DATA is one word, the LEN=3

If DATA is one byte, the LEN=2

When inverter has no this function code or reply no effect, format as follows ADDR 81H 01FUNC.

**b. Write function code data**

format:

ADDR 03 01 FUNC

ADDR=0 for broadcast, it write to all inverter, but no reply

ADDR=1-250 set data and reply from inverter of this address

When inverter has no this function code or reply of no effect, format as follows ADDR 82H 01 FUNC.

**c. Control command**

format:

ADDR 03 01 FUNC

ADDR=0 for broadcast, it write to all inverter, but no reply

ADDR=1-250 set data and reply from inverter of this address

CNTR format

7	6	5	4	3	2	1	0
jogr	jogf	jog	f/r	stop	Rev	for	Run

When inverter reply normal, format as follows

ADDR 03H 01 CNST

CNST format

7	6	5	4	3	2	1	0
		f/r	jogging	running	f/r	jog	Run

When inverter has no this function code or reply of no effect, format as follows ADDR 83H 01 FUNC

**d. Read status**

format:

ADDR 04 01 CFG

ADDR=0 for broadcast, but no reply

ADDR=1-250 reply from inverter of this address

CFG=0 reply all data

CFG=1-8 reply single data

CFG data means as follows

1: Set F    2: Out F    3: Out A    4: Rot T    5: DCV

6:ACV    7:Cont    8:Tmp

4) LEN: data length

It means the length of  $D_{(n-1)} - D_{(0)}$

5) DATA: data content

each of 8-bit data is composed of two ASC II byte, it have fifty ASC II at most.

6) LRC: longitudinal redundancy check

Get LRC methods is that add ADDR to the last data, if the result is more than 256, then the result subtract 256 until the result is less than 256, then 100H subtract the result get LRC.

7) For example: write 30.00Hz to inverter of 01

STX	ADDR	FUNC	LEN	DATA	LRC	END
“.”	“0” “1”	“0” “2”	“0” “3”	“0” “0” “0” “B” “B” “8”	“3” “7”	“CR” “LF”
3AH	30H31H	30H32H	30H33H	30H30H30H42H42H38H	33H37H	0DH0AH

Calculate LRC:

$$01H+02H+03H+00H+0BH+B8H=C9H$$

So the sanded data is following

3AH 30H 31H 30H 32H 30H 33H 30H 30H 30H 42H 42H 38H 33H 37H 0DH 0AH

**3.2 RTU mode**

1) QUIENT: the time of no data is more than 50 millisecond

2) ADDR: communication address, 8-bit data

3) FUNC: function code, 8-bit data, refers to 3.1-3

4) LEN: data length, the length of  $D_{(n-1)} - D_{(0)}$

5) DATA: data content, n\*8-bit data

6) CRC: cyclical redundancy check

The CRC calculation method is following

1: make a register and set value 0FFFFH(call CRC register)

2: done first byte of data exclusive or with low byte of CRC register

3: done right shift with CRC register and fill zero to left bit, then check low bit of CRC register

4: if the low bit is zero, then do repeat step3, else CRC register do exclusive or with 0A001H

5: done repeat step 3 and 4, until CRC register dude right shift 8 times

6: done repeat step 2 to 5 for the next byte of data, until process completely all data

7: for example 1:

Write 30.00Hz to inverter of 01

Command data

ADDR	FUNC	LEN	DATA	CRC
01H	02H	03H	00H 0BH B8H	7FH 0CH

Send data 01H 02H 03H 00H 0BH B8H 7FH 0CH

8: for example 2:

The following is that get CRC value with C language.

The function has two parameters

Unsigned char data ← the point of data buffer

Unsigned char length ← number of data buffer

This function will send back the CRC value with unsigned integer format.

```
unsigned int crc_chk(unsigned char data unsigned char length)
{
    into j;
    unsigned int reg_crc=0xffff;
    while(length——)
    {
        reg_crc^=*data++;
        for(j=0;j<8;j++)
        {
            If(reg_crc&0x01) { /*LSB(b0)=1*/
                reg_crc=(reg_crc>>1)^0xa001;
            } else
            {
                reg_crc=reg_crc>>1;
            }
        }
    }
    return reg_crc;
}
```

#### C120 Parameter lock select

Set range:0—1 Unit:1 Factory setting:0

**0: invalid**

**1: valid** (which means the other parameters have been locked and unchangeable)

This function can prevent other personnel from changing your set value.

#### C121 Display mode select

Set range: 0—15 Unit: 1 Factory setting: 0

**0: not display**

**1: on display**

#### C123 Voltage class of the inverter

Factory setting : \*

Depend on Inverter model. It cannot be changed.

#### C124 Rated current of the inverter

Factory setting:\*

Depend on Inverter model. It cannot be changed.

#### C125 Frequency converter countries

Set range:0—1 Factory setting: \*\*\*\*

#### C126 Manufacture date

Factory setting : \*

Factory setting only

<b>C127 Manufacture sequence number</b> Factory setting : *
----------------------------------------------------------------

This parameter is a factory setting, only for checking and verifying.

<b>C128 Factory setting</b> Set range: 0—8      Unit: 1      Factory setting: 0 <b>0:Softwere Ver.</b> <b>1~4: Trip information</b> <b>6:Trip list Clear</b> <b>8:Constant initialize</b>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>C129 Factory establishing value</b> Factory setting:**
--------------------------------------------------------------

Note:

\* means: this setting has several choices and it should be set according to practical situation or condition.

## 11. Maintenance, Inspection, Error Information and Troubleshooting

The inverter will function efficiently and its normal operation lifetime will be longer if it has periodic maintenance and inspection.

### 1. Precautions about maintenance and inspection:

- During inspection, turn OFF AC main circuit power supply first.
- After turning off the main circuit power supply, wait until the CHARGE indicator light goes out before performance maintenance and inspection. (The capacitor will remain charged and it's dangerous.)
- During inspection, do not change the wiring, or remove connectors, or it will cause damage to the inverter.
- Do not leave any metal objects in the inverter after the service, or it will result in the circuit board short circuit.
- Keep the inverter clean, cool and dry, avoid dust, oil mist and moisture.

### 2. Periodic maintenance and inspection items

- Whether the power supplies voltage conforms to the rated voltage of the inverter. (Pay special attention that whether there is any damage on the power supply wires and the motor.)
- Whether the wiring terminals and the connectors are tight.
- Whether there is dust, iron filings or corrosive fluid in the inverter.
- Never measure the inverter insulation impedance.
- Examine the output voltage, output current and output frequency.
- Whether the temperature of the inverter working space is between -5°C and 40°C.
- Whether the humidity is kept below 90%(no condensation).
- Whether the motor is vibrating or making unusual noises in running.
- Periodic cleaning of the vent holes should be done.

### 3. Fault indication and troubleshooting

Fault code	Content	Solution
E.OC.A	Over current during acceleration	1: check whether the motor has got short circuit or party short circuit, whether the insulation of the output is well. 2: wires extend the accelerating time. 3: select a larger inverter. 4: lower the torque set value
E.OC.n E.OC.d E.OC.S	Over current during constant speed  Over current during deceleration	1: check whether the motor has got short circuit, whether the insulation of the output wires is well. 2: check whether the motor is rotating with some external jamming force, whether there is a sudden change is mechanical load. 3: select a larger inverter 4: whether there is a sudden change in the voltage of the network source.  1: whether the insulation of the output wires is well, whether the motor has got short circuit. 2: external the decelerating time. 3: select a larger inverter. 4: lower the DC braking voltage.
E.OF.S E.OF.a E.OF.n E.OF.d	Earth connection short circuit	1: check whether the motor has got any short circuit. 2: check whether the insulation of the output wires is well. 3: notify your supplier to check.
E.ou.S  E.ou.a  E.ou.n  E.ou.d	Over voltage during stopping  Over voltage during acceleration  Over voltage during constant speed  Over voltage during deceleration	1: extend the decelerating time or add a braking resistor. 2: correct the input voltage of the network source; check whether there is a sudden change in voltage.

E.Fb.S E.Fb.n E.Fb.a E.Fb.d	Fuse break	Notify your supplier to check.
E.Lu.s E.Lu.A E.Lu.n E.Lu.d	Low voltage	1: check whether the input voltage in normal. 2: check whether there is sudden change in load. 3: check whether there is any absent phase.
E.OH.S E.OH.A E.OH.n E.OH.d	Inverter overheating	1: check whether the fan works well, whether there is any foreign matter stuck in the cooling fins. 2: check whether the temperature is suitable for normal working. 3: check whether there is enough ventilation space and good air convection.
E.OLA E.OL.n E.OL.d	Inverter overload	1: select a larger inverter. 2: check whether there is any jamming in the mechanical load. 3: select optimum V/F pattern.
E.OA.A E.OA.n E.OA.d	Motor overload	1: check whether there is a sudden change in mechanical load. 2: select a larger inverter. 3: check whether the insulation of the motor is well. 4: check whether there is any big unsteady voltage wave. 5: check whether there is any absent phase.

Fault code	Content	Solution
E.OT.A E.OT.n E.OT.d	Over torque	1: check whether there is any wave motion in mechanical load. 2: select a larger inverter.
E.bs.A E.bs.n E.bs.d E.bs.S	No feedback of the auxiliary coil of the electromagnetic contactor in the inverter	Notify your supplier to check.
E.bT.A E.bT.n E.bT.d	Braking transistor in damage	Notify your supplier to check.
E.EC.S E.EC.n E.EC.d E.EC.A	CPU fault	Notify your supplier to check.
E.EE.S E.EE.n E.EE.d E.EE.A	E <sup>2</sup> Prom fault	Notify your supplier to check
Er	External Interference	Isolate from the interference source
Es	Emergency Stop	In Emergency Stop Status
20	4-20mA wire broken	Join the broken wires
Pr	Setting error	Correct the setting
DCb	DC braking	In DC braking status

- (1) If the motor does not operator:
  - 1) The operation method setting is wrong.
  - 2) The frequency reference is too low or isn't given.
  - 3) Multi-function input terminals function setting error.
- 4) Peripheral wiring is wrong, for example, the 2-wire sequence, 3-wire sequence or related setting is wrong.
  - 5) The inverter is in the fault protection status.
  - 6) Motor fault.
  - 7) Inverter fault.
- (2) The parameter cannot be set:
  - 1) Unlock the parameter lock function (CD010).
  - 2) The inverter is in running.
  - 3) Abnormal patch plug connection, abnormal communication of the digital operator. After cutting off the power supply take down the digital operator and fit it again.
- (3) The motor only rotates in FOR direction.

“Reverse run prohibited ” is selected.
- (4) If the direction of the motor rotation is reversed.

The motor output wiring is faulty. Switching two wires among U.V.W will settle the problem.
- (5) If motor deceleration is too long
  - 1) The deceleration time setting is too long.
  - 2) Add braking resistor.
  - 3) Add DC brake.
- (6) If the motor overheats.
  - 1) The load is too big. Consider increasing the motor capacity.
  - 2) The ambient temperature is too high. The motor will burn out if it is run continuously at the rated torque in an environment in which the maximum ambient operating temperature is exceeded. Lower the motor's ambient operating temperature range.
  - 3) The withstand voltage between the motor phases is insufficient.

When the motor is connected to the inverter output, a surge is generated because of the on/off of the IGBT and inverter. Normally the maximum surge voltage is three times the inverter's input power supply voltage. Be sure the motor withstand voltage is high than the maximum surge voltage.
- (7) If the inverter produces interference to other devices.
  - 1) Lower the carrier frequency.
  - 2) Add a nose filter on the power supply input side.
  - 3) Add a noise filter on the output side of the inverter.
  - 4) Confirm the inverter and motor in good earth-connection status.
  - 5) Have the wire shielded.
  - 6) Get the main circuit wires and the control circuit wires separated.
- (8) If the inverter detects over current when the output load is fan.
  - 1) Get “DC braking” valid at starting.
  - 2) If “DC braking” is already valid, please increase the DC braking value.
- (9) If there is Mechanical Vibration
  - 1) There may be resonance between the mechanical system's characteristic frequency and the carrier frequency.
  - 2) There may be resonance between a machine's characteristic frequency and the output frequency of the inverter.

To prevent this from occurring, either use the jump frequency functions or install rubber padding on the motor base to reduce vibration.

## **11. Peripheral devices and specification of options**

### **11.1 Peripheral Devices**

Name	Purpose and descriptions
NFB or Ground fault interrupter	Protect inverter wiring. Always connect a breaker to the power supply line to protect inverter wiring. Use a ground fault interrupter suitable for high frequencies.
Magnetic contactor	Prevent burning when a Braking Resistor is used. Always attach a surge absorber to the coil.
Surge absorber	Absorb surge from the magnetic contactor and control relays.
Isolator	Isolate the I/O signals of the inverter and is effective to reduce to interference to other electric devices.
DC Reactor	Used to improve the input power factor of the inverter.
AC Reactor	Used to improve the input power factor of the inverter.
Braking resistor, braking resistor unit	Consume the regenerative energy of the motor and reduce deceleration time.

11.2 Proper specifications of options.

11.2.1 DC Reactor

Model	Current (A)	Inductance (mA)	Model	Current (A)	Inductance(mA)
00D423A	2.5	4.2	03D743B	10.0	2.2
0D7523A	5.0	2.1	05D543B	15.0	1.42
01D523A	10	1.1	07D543B	20.0	1.06
02D223A	15	0.71	001143B	30	0.7
0D7543A	2.5	8.4	001543B	40	0.53
01D543A	5.0	4.2	18D543B	50	0.42
02D243A	7.5	3.6	002243B	60	0.36

11.2.2 AC Reactor

	Model	Current (A)	Inductance (mA)
220V Class	00D423A	2.5	4.2
	0D7523A	5	2.1
	01D523A	10	1.1
	02D223A	15	0.7
400V Class	0D7543A	2.5	8.4
	01D543A	5	4.2
	02D243A	7.5	3.6

11.2.3 Braking resistor

Model	Specifications of braking resistor		Braking torque 10%ED	Motor (KW)
	W	$\Omega$		
HC1C00D423A	80	200	125	0.4
HC1C0D7523A	100	200	125	0.75
HC1C01D523A	300	100	125	1.5
HC1C02D223A	300	70	125	2.2
HC1C0D7543A	80	750	125	0.75
HC1C01D543A	300	400	125	1.5
HC1C02D243A	300	250	125	2.2



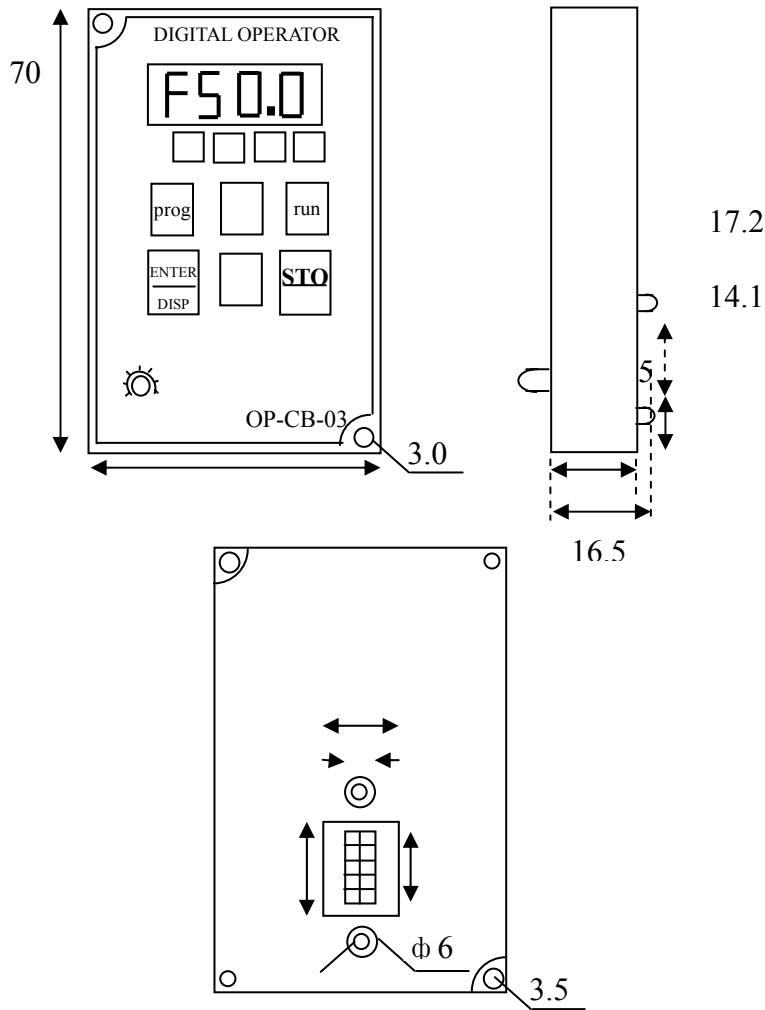
**APPENDIX A**

● **V/F Curves Selection**

When C003 is set as 1~16, you have 16 curves at your choice

Use	C003	C010	C005	C007	C009	C006	C008	Remarks
Constant torque	1	50	50	2.5	1.25	15	9	→
	2	60	60	3.0	1.5	15	9	
	3	60	50	2.5	1.25	15	9	
	4	72	60	3.0	1.5	15	9	
	5	75	50	2.5	1.25	15	9	
	6	90	60	3.0	1.5	15	9	
	7	100	50	2.5	1.25	15	9	
	8	120	60	3.0	1.5	15	9	
Start high	9	50	50	2.5	1.25	20	10	
	10	60	60	3.0	1.5	20	10	
	11	50	50	2.5	1.25	25	15	
	12	60	60	3.0	1.25	25	15	
Wind model	13	50	50	2.5	1.25	50	8	
	14	60	60	3.0	1.5	50	8	
	15	50	50	2.5	1.25	100	8	
	16	60	60	3.0	1.5	100	8	

● Appearance and size of operating device



## **TECORP ELECTRONICS CO., LTD.**

3F-3, No.12, Lane 609, Sec.5, Chung Hsin Rd.,  
San Chung, Taipei County, Taiwan, R.O.C.

Tel : +886-2-29991466

Fax: +886-2-29992691

E-mail: [top2@tecorp-group.com](mailto:top2@tecorp-group.com)

[Http://www.tecorp-group.com](http://www.tecorp-group.com)

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