



500 Series Vector Control Inverter

Innovative Technology
Global Service



Selection Manual

ABOUT US

Shenzhen HBDTECH Technology Co., Ltd.

We are committed to technological innovation and select high-standard R&D engineers. All designers involved in R&D require more than 5 years of experience in inverter design, and the leading figures are senior R&D engineers with 25 years of experience in inverter design. The IGBT is the Infineon brand imported from Germany. A variety of high-quality electronic components are multiplexed and screened before being put into production. It is such a rigorous standard that has created a quality and stable product. We are committed to continuously improving customer satisfaction, innovating technology, serving the world, making friends all over the world, and making progress with all customers.

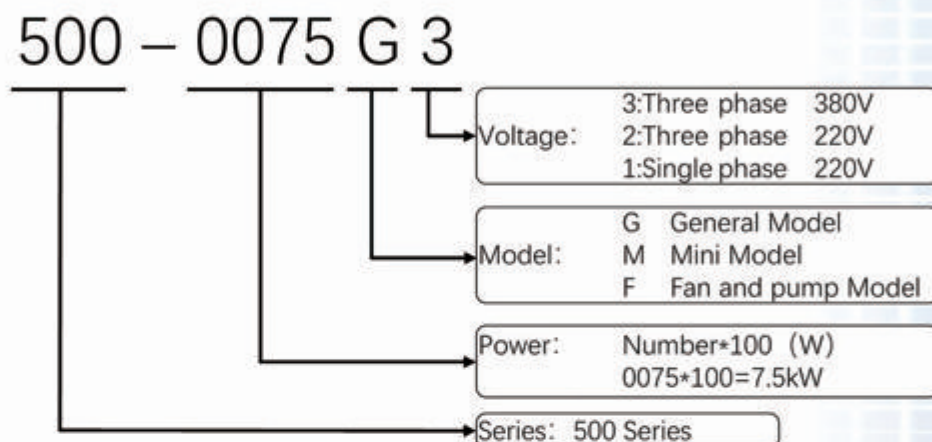


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Part 1 : Machine Nameplate



Input : Three Phase AC 380V 50/60Hz
Range: -15%~+30%

Model No.	Drive Motor (kW)	Power capacity (kVA)	Output Current (A)	N.W (kg)	G.W (kg)	Size L/W/H(mm)	Installation a/b/d(mm)
500-0007G3	0.75	1	2.1	1.3	1.5	152*101*117	143*92*2
500-0015G3	1.5	2	3.8	1.3	1.5	152*101*117	143*92*2
500-0022G3	2.2	3	5	1.3	1.5	152*100*127	143*92*2
500-0040G3	4	5	9	2.75	2.9	221.6*113*166.5	202*98.7*5
500-0055G3	5.5	7.5	13	2.75	2.9	221.6*113*166.5	202*98.7*5
500-0075G3	7.5	10	17	2.75	2.9	221.6*113*166.5	202*98.7*5
500-0110G3	11	15	25	4.3	5	265*160*171.5	244.3*143*6.5
500-0150G3	15	20	32	4.3	5	265*160*171.5	244.3*143*6.5
500-0180G3	18.5	25	38	6.3	7.3	302.5*192*171.5	277*172*8.5
500-0220G3	22	30	45	6.3	7.3	302.5*192*171.5	277*172*8.5
500-0300G3	30	40	60	9.5	10.5	348.5*227*171.5	323*208.5*17
500-0370G3	37	50	75	9.5	10.5	348.5*227*171.5	323*208.5*17
500-0450G3	45	60	90	20.7	22	490*330.5*229.3	459*202.5*17
500-0550G3	55	70	110	20.7	22	490*330.5*229.3	459*202.5*17
500-0750G3	75	100	150	40	42	600*388.1*289.4	569*260*17
500-0930G3	90	125	170	40	42	600*388.1*289.4	569*260*17
500-1100G3	110	150	210	56	58	690*370*350	635.5*302*17
500-1320G3	132	175	250	56	58	690*370*350	635.5*302*17
500-1600G3	160	210	300	96	98	930*580*385	895*450*17
500-1850G3	185	250	340	96	98	930*580*385	895*450*17
500-2000G3	200	260	380	96	98	930*580*385	895*450*17
500-2200G3	220	300	415	96	98	930*580*385	895*450*17
500-2500G3	250	350	470	145	147	1060*650*392.5	1012*420*24
500-2800G3	280	370	520	145	147	1060*650*392.5	1012*420*24
500-3150G3	315	400	600	145	147	1060*650*392.5	1012*420*24
500-3550G3	355	420	650	234	236	1362*818*404.5	1280*520*28
500-4000G3	400	530	725	234	236	1362*818*404.5	1280*520*28

Part 2 : Model

Input : Single Phase AC 220V 50/60Hz
Range: -15%~+30%

Model No.	Drive Motor (kW)	Power capacity (kVA)	Output Current (A)	N.W (kg)	G.W (kg)	Size L/W/H(mm)	Installation a/b/d(mm)
500-0004M1	0.4	0.5	2.5	0.7	1	142*85.5*113	132*74*2
500-0007M1	0.75	1	4	0.7	1	142*85.5*113	132*74*2
500-0015M1	1.5	2	7	0.7	1	142*85.5*113	132*74*2
500-0007G1	0.75	1	4	1.3	1.5	152*101*117	143*92*2
500-0015G1	1.5	2	7	1.3	1.5	152*101*117	143*92*2
500-0022G1	2.2	3	10	1.3	1.5	152*101*117	143*92*2



Part 3 : Function Description

Item	Specifications
Control system	High performance of current vector control technology to realize asynchronous motor and synchronous motor control
Drive performance	High efficiency driving for induction motor and synchronous motor
Maximum frequency	Vector control: 0-300Hz V/F control: 0-3200Hz
Carrier frequency	0.5kHz-16kHz; the carrier frequency will be automatically adjusted according to the load characteristics
Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency $\times 0.025\%$
Control mode	Open loop vector control (SVC) Closed loop vector control (FVC) V/F control
Startup torque	G type: 0.5Hz/150%(SVC); 0Hz/180%(FVC) P type: 0.5Hz/100%
Speed range	1: 100(SVC) 1: 1000(FVC)
Speed stabilizing precision	$\pm 0.5\%$ (SVC) $\pm 0.02\%$ (FVC)
Torque control precision	$\pm 5\%$ (FVC)
Over load capability	G type: 150% rated current 60 seconds; 180% rated current 3 seconds; P type: 120% rated current 60 seconds; 150% rated current 3 seconds
Torque boost	Auto torque boost function; Manual torque boost 0.1%-30.0%
V/F curve	Linear V/F, multi-point V/F and square V/F curve (power of 1.2, 1.4, 1.6, 1.8, 2)
V/F separation	In 2 ways: separation, semi separation
Acc. / Dec. curve	Straight line or S curve acceleration and deceleration mode. Four kinds of acceleration and deceleration time. Acceleration and deceleration time range between 0.0s to 3000.0min
DC brake	DC brake frequency: 0.00Hz to maximum frequency. Brake time: 0.0s to 36.0s, and brake current value: 0.0% to 100.0%.
Jog control	Jog frequency range: 0.00Hz-50.00Hz. Jog acceleration/deceleration time 0.0s-6500.0s.
Simple PLC and MS speed running	It can realize at maximum of 16 segments speed running via the built-in PLC or control terminal.
Built-in PID	It is easy to realize process-controlled closed loop control system
Auto voltage regulation (AVR)	It can keep constant output voltage automatically in the case of change of network voltage.
Over-voltage/current stall control	It can limit the running voltage/current automatically and prevent frequent over-voltage/current tripping during the running process
Quick current limit	Minimize the over-current fault, protect normal operation of the inverter
Torque limit & control	"Excavators" characteristics, automatically limit torque during operation, prevent frequent over-current tripping. Closed loop vector mode can realize the torque control.
Instantaneous stop non-stop	When instantaneous power off, voltage reduction is compensated through load feedback energy, which could make inverter keep running in a short period of time.
Rapid current limit	To avoid inverter frequent over-current fault.
Virtual IO	5 groups of virtual DI, DO to realize simple logic control
Timing control	Timing control function: set time range 0Min-6500.0Min
Multiple motor switch	4 groups of motor parameters, which can realize 4-motor switch control
Multi-threaded bus support	Support 4 kinds of field bus: RS485, Profibus-DP, CAN link, CAN open
Motor overheat protection	Select optional our company C1 analog input DI3x can accept the motor temperature sensor input(PT100, PT1000)
Multi-encoder support	Support difference, open collector, UVW, rotary transformer, sine cosine encoder etc.
Programmable PLC	Select optional user programmable card, which can realize secondary development. Programming mode is compatible with our company Company PLC.
Excellent backend software	Support inverter parameter operation and virtual oscilloscope function. Inverter internal state graphic monitor can be realized through virtual oscilloscope.
Running command channel	Three types of channels: operation panel reference, control terminal reference and serial communication port reference. These channels can be switched in various modes.
Frequency source	There are totally eleven types of frequency sources, such as digital reference, analog voltage reference, analog current reference, pulse reference, MS speed, PLC, PID and serial port reference.
Auxiliary frequency source	11 kinds of auxiliary frequency source which can flexible achieve auxiliary frequency tuning, frequency synthesis
Input terminal	Standard: 6 digital input terminals, DI5 can be used as 100kHz high-speed input pulse. 3 analog input terminals which can be used as 0-10V voltage input or 0-20mA current input. Extended function: 4 digital input terminals;
Output terminal	Standard: 2 digital output terminals, FM is high-speed pulse output terminal (it can be chosen as open circuit collector type), support 0-10kHz square wave signal; 1 relay output terminal; 2 analog output terminals, support 0-20mA output current or 0-10V output voltage; Extended function: 1 digital output terminal; 1 relay output terminal; 1 analog output terminal, support 0-20mA output current or 0-10V output voltage.

Keyboard operation	LED display	Realize parameter setting, status monitoring function
	OLED display	Optional device, which can offer Chinese / English operating content
	Keyboard potentiometer	Equipped with keyboard potentiometer or coding potentiometer
	Parameter copy	Realize parameter rapid copy through OLED operation panel
	Key lock & function selection	Realize button locking, define operation range for part of buttons to prevent operation fault.
	Protection function	It can implement power-on motor short-circuit detection, input / output phase loss protection, over current protection, over voltage protection, under voltage protection, overheating protection and overload protection.
Environment	Optional parts	OLED operation panel, brake component, multi-function extended card I.IO extended card 2.user programmable card, RS485 communication card, Profibus-DP communication card, CAN link communication card, CAN open communication card, differential input PG card, UVW differential input PG card, rotating inverter PG card, OC input PG card.
	Using place	Indoor, and be free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapor, drip or salt.
	Altitude	Below 1000m
	Ambient temperature	-10 °C to +50 °C (Derating use when under ambient temperature of 40 °C to 50 °C)
	Humidity	Less than 95%RH, without condensing
Vibration	Less than 5.9m/s ² (0.6g)	
Storage temperature	-10°C - +50°C	

Part 4 : Products



0.75kW~2.2kW



4kW~7.5kW



11kW~15kW



18.5kW~30kW



45kW~55kW



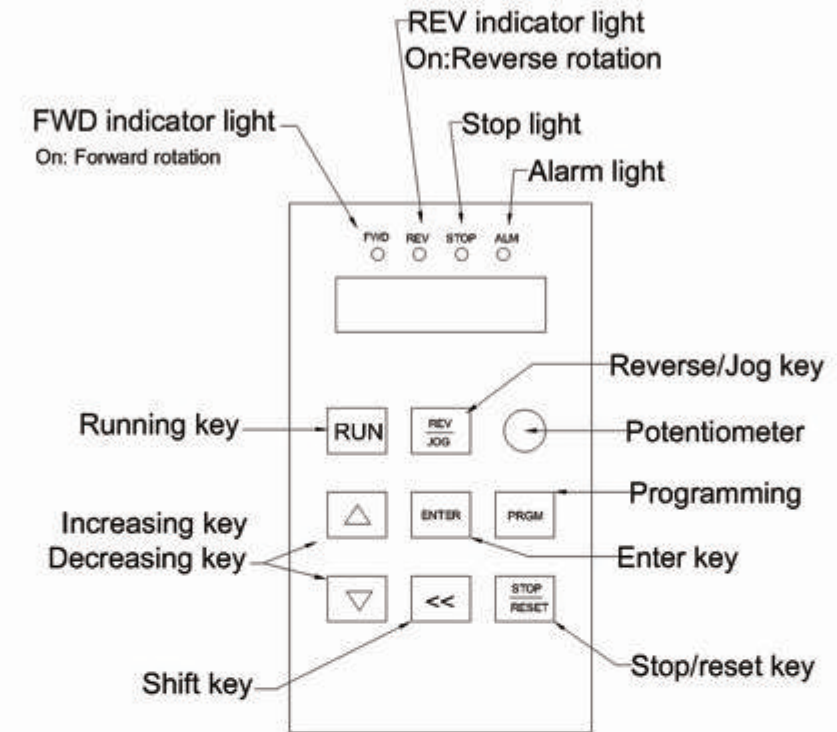
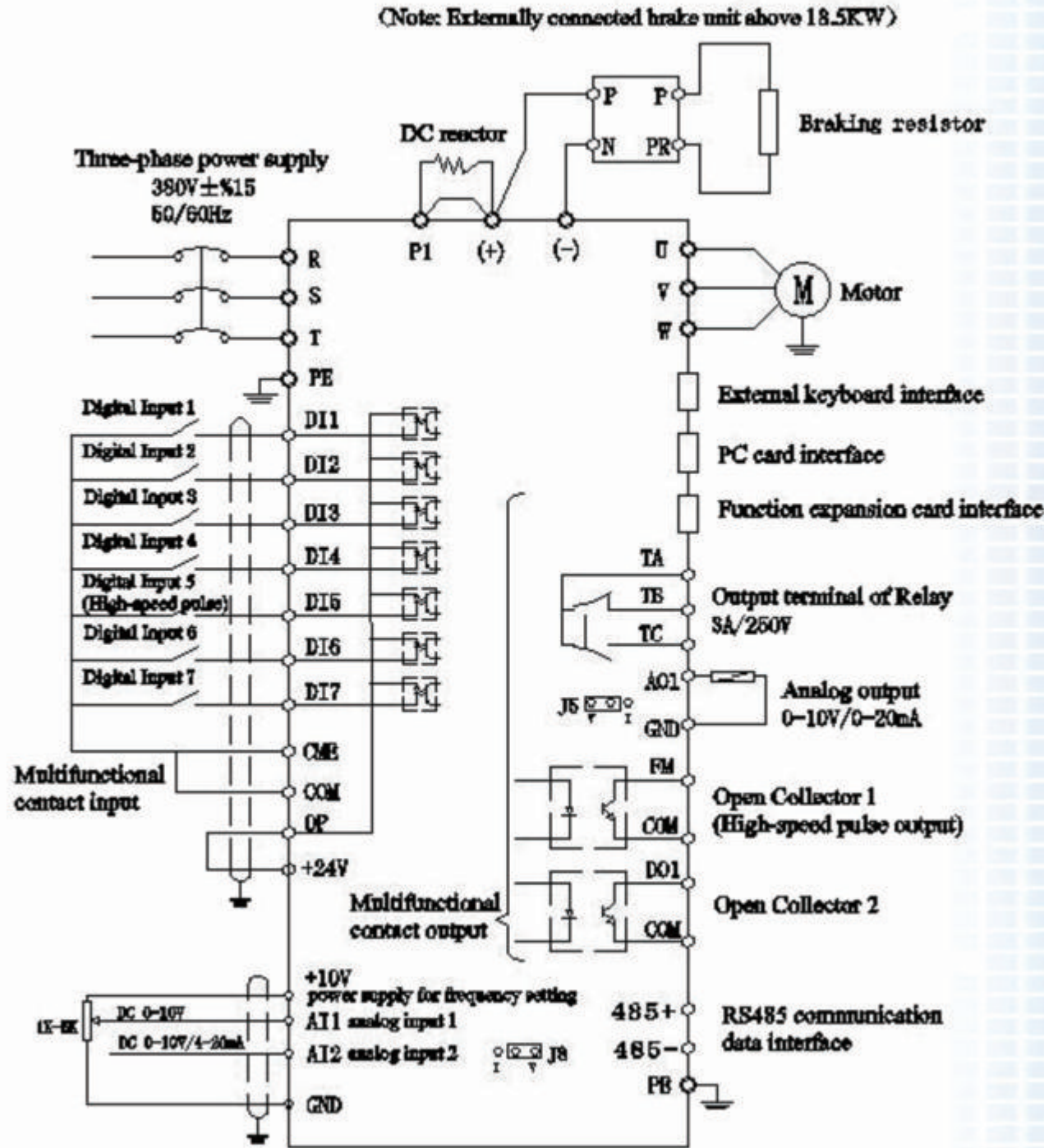
75kW~90kW



110kW~132kW

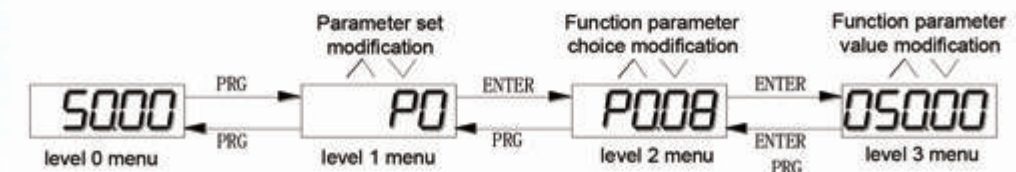
Part 5 : Product Wiring Diagram

Part 6 : Display Interface



Example: Description of function code viewing and modification method

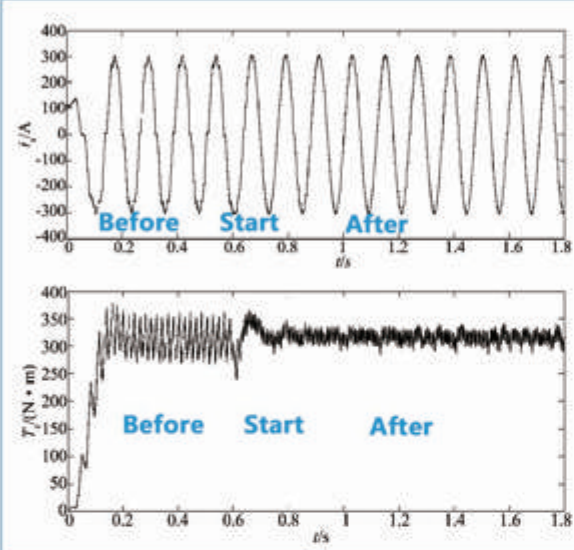
The operation panel of 500 inverter adopts three-level menu structure to perform parameter setting. The three-level menu includes: function parameter group (level 1 menu) → function code (level 2 menu) → setting value of function code (level 3 menu). The operation process is as shown in Figure below.



Caution: When operating on level 3 menu, press PRG key or ENTER key to return to level 2 menu. The difference between ENTER and PRG keys is that pressing ENTER KEY will save the setup parameter and return to level 2 menu and then automatically shift to the next function code, while pressing PRG key will directly return to level 2 menu without saving the parameter, and it will return to the current function code.

Part 5 : Product Testing

01: Dead-time compensation

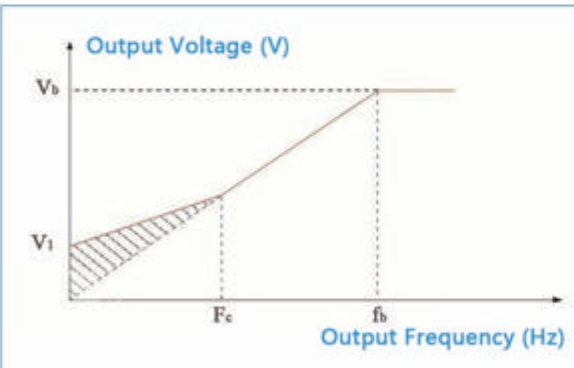


When there is a special requirement for the quality of the output voltage waveform, or when the motor is abnormal such as oscillation, Dead band compensation can be enabled.

Corresponding parameters: A5-02

Related parameters: P8-12, A5-02, A5-08

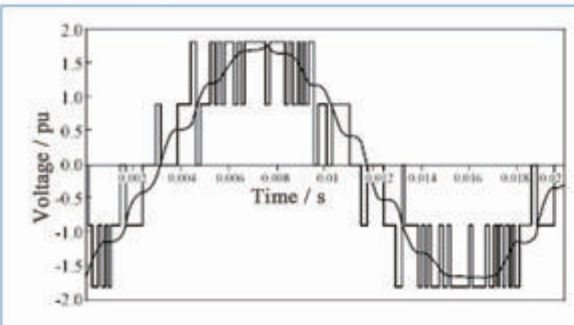
02: Starting Torque Boost



V_b : Maximum output voltage
 f_b : Rated operating frequency
 V_1 : Manual torque boost voltage
 F_c : Manual torque boost cutoff frequency

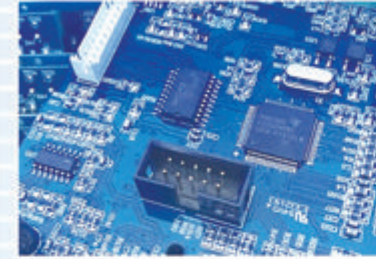
Related parameters: P8-12, A5-02

03: Output Waveform



The inverter output is SPWM waveform
 The frequency and amplitude of the output voltage of the inverter circuit can be adjusted by changing the frequency and amplitude of the modulated wave.

Part 6 : Internal Device Display



Use FR-4 high quality PCB board.
 Adopt advanced PCBA process.
 The surface is sprayed with thickened three anti-paint, insulated, moisture-proof, dust-proof and corrosion-resistant.



The core component IGBT adopts the German imported Infineon module.
 This is the guarantee of high quality of our products.



The main loop capacitor uses industrial grade high standard capacitors.
 The brand is Jianghai, and all parameters have reached the industrial level.
 This makes our products more stable.



Use a double ball bearing fan.
 The smart chip controls the fan to run.
 Make the fan more efficient and reach 80,000 hours of normal operation.



Use high quality electronic components.
 These electronic components have been put into production after our multiple inspections, which makes our products more stable, efficient and durable.