



Shenzhen ALPHA Electric Co.,Ltd

Address :

No.21 Gui hua Jia yi Industrial Park, Gui yue Road, Guan lan Long hua
District Shenzhen City Guang dong Province China

Tel :

+86-0755-83152218 ; +86-0755-83313167

Fax :

+86-0755-83175185 ; +86-0755-83313165

E-mail :

info@szalpha.com

Website :

www.szalpha.com



6000E&6000M

Current Vector Inverter

ELECTRIC SHOCK
In the user manual
when electrical power is
10 minutes after power off.
Set AC power to output terminals.
or grounding techniques.

» Company Profile

Shenzhen ALPHA Electric Co.,Ltd was established in 2000, and owns more than 30 subsidiaries and 50 after-sale service centers across China. Our headquarter is located in Longhua district of Shenzhen City, and has another 2 manufacturing bases are located in Zhejiang Province and Jiangxi Province. The company employs more than 500 people, of which about 60 percent are technology staff.

Our main business is in the design, development, and sales of industrial automation, power assembly of new energy automobile, and intelligent elevator control system. Meanwhile, as a High-Tech enterprise, we put a lot of focus in R&D expenditures. We have several comprehensive laboratories, we have introduced the advanced technology from both domestic and abroad, we also allied with a number of scientific research institutions and universities.

Through years of efforts, our professional sales and after-sale service teams help Alpha not only gain the customers recognition by reliable products, but also gain the customers trust by premium services. In the future, we will continue to serve our partners with professional spirit and excellent services based on industrial automation, new energy vehicle, and elevator control fields, achieve win-win collaboration.



» Product Introduction

6000E/M is a high-performance open loop current vector frequency inverter. It adopts 32-Bit DSP, high integration, compact design, perfect protection, high reliability. The controlling software integrates advanced current vector controlling technology and magnetic flux vector controlling technology with strong overload ability which ensures the quick response, stability in low frequency running, high torque output in low frequency. It can meet with a wide application demands with leading technology in global market.



» Features

Compact Structure	Optimized structure design, advanced technical platform	
	Improved brake circuit	
	Optional built-in brake unit for 18.5KW~93KW	
Superior Performance	High accuracy of stable speed, wide speed scope	
	High output under vector control	
	High torque under low speed, small torque fluctuation	
	Optimized VF algorithm	
	High accuracy of motor parameter setting	
High Reliability	AVR Function guaranteed high torque output under low voltage	
	High heat reliability	Independent ventilation design
	Temperature increase test	Accordance with the wide voltage input scope under international standard
	Auto-spraying technology	long life-time design
	Improved EMC design	Compliance with CE certification
Easy to use	Overexcitation Function	Rs485 Communication port and MODBUS communication agreement
	Instant shut down without stop machine	Application in wind generator and pump
	Improved machine protection	VF fully separation and semi-separation
	Keyboard extension	Diverse terminal function, ease to use

» Application

CNC Machinery, Chemical Fiber, Plastic Machinery, Textile Machinery, Food Machinery, Ceramic Machinery, Centrifugal Machinery, Wood Craft Machinery, Printing Machinery, Package Machinery, Wind Generator, Pump, etc.

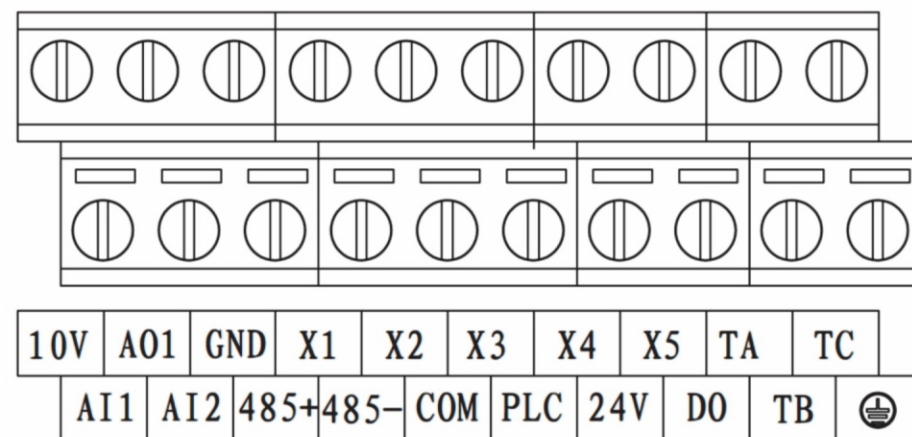
» Product Infomation

• Product naming rules

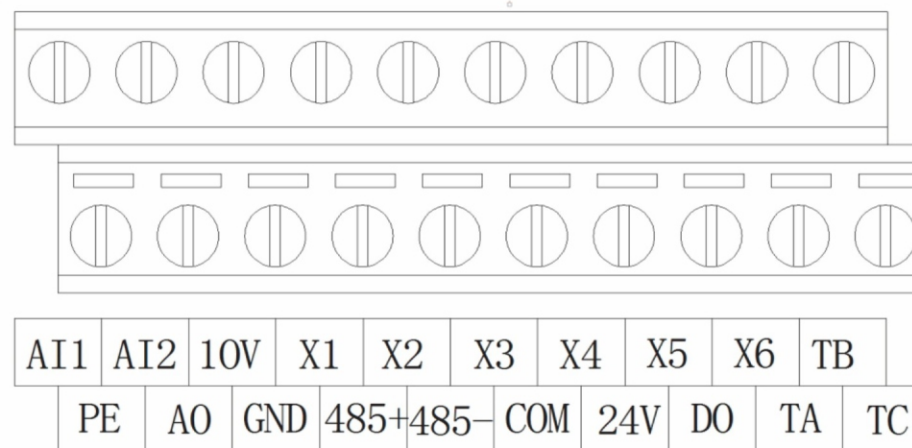
ALPHA6000E - 3 R75 G B

- (1) Serial No ALPHA6000E ALPHA6000M
 (2) Rated voltage S2: Single phase 220V 3: Three phase 280V;
 (3) Rated motor power R75:0.75KW 7R5:75KW 075:75KW
 (4) Suitable load G: General type P:Square torque type ;
 (5) Additional remark S: With braking unit

• Control Circuit Terminal



Control circuit terminal configuration of S2R4GB~S2R75GB



Control circuit configuration for power
 S21R5GB, S22R2GB, 3R75GB/31R5PB or above.

» Control Loop Terminal Function

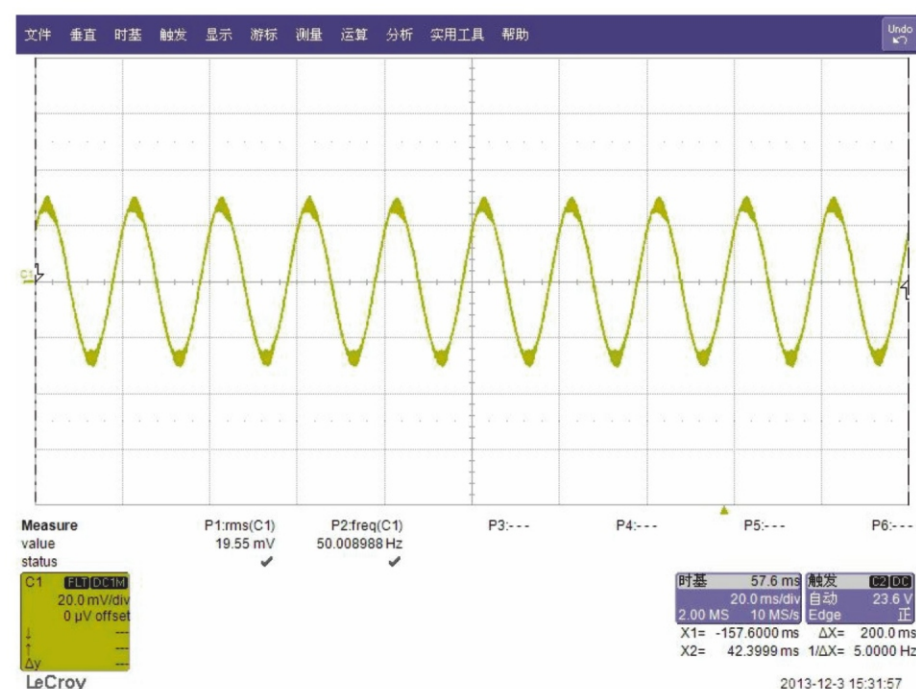
Type	Terminal No	Name	Terminal Function	Specification
Analog Input	A11	Analog input 1	Receive voltage/current input, Voltage/current is chosen by SW2, Default input voltage, range setting check instruction book P4.00~P4.05.	A11 Input voltage range 0~10V (Input impedance:30kΩ), A11 Input current range 0~20mA (Input impedance:250Ω)
	A12	Analog input 2	Receive voltage input, range setting check instruction book P4.06~P4.09.	A12 Input voltage range 0~10V (Input impedance:30kΩ)
Analogy Output	AO	Analog output	Provide analog voltage/current output, voltage/current chosen by SW3 switch. Default input voltage indicates 14 amounts.	Current input range: 0~20 mA /4~20 mA Voltage input range: 0~10V/2~10V
Commu- nication	485+	Rs485 Communication interface	485 differential signal plus end	Standard RS-485 communication port, not isolated with GND, twisted pair or barrier wire only.
	485-		485 differential signal minus end	
Multi- Functional Input Terminal	X1	Multi-functional input terminal 1	Defined to be multi-functional switch of input terminal	Optical-Coupler isolation input, Input impedance r=3.9kΩ, Maximum input frequency 400Hz, Input Voltage scope: 0~30V.
	X2	Multi-functional input terminal 2		
	X3	Multi-functional input terminal 3		
	X4	Multi-functional input terminal 4	Defined to be multi-functional switch of input terminal except defined to be high speed pulse input port, defined to be multi-functional switch of input terminal only under S2R4GB, S2R75GB	Optical-Coupler isolation input, Input impedance R=3.9kΩ, Maximum input frequency: 400 Hz/50KHz, Input voltage : 0~30v,
	X5	Multi-functional input terminal 5	Defined to be multi-functional switch of input terminal except defined to be high speed pulse input port	Optical-Coupler isolated input, Input impedance R=3.9kΩ, Maximum input frequency: 50KHz, Input voltage Scope: 0~30V Reference: COM.
	X6	Multi-functional input terminal 6		
Multi- Function Output	DO	Output terminal of open electrode	Defined to be multi-functional pulse signal output terminal as well as the switch of output terminal	Optical-Coupler isolated open electrode output. Voltage scope:0~26V, Maximum output current: 50mA, Output frequency scope: 0~50KHz
Electric Replay Output	TA	Electric relay output	Defined to be multi-functional electric relay output terminal	TA-TB: Close. TA-TC: Open. Contact Capacity: 250VAC/2A (COSφ=1), 250VAC/1A (COSφ=0.4), 30VDC/1A
	TB			
	TC			
Power	10V	+10V Power	Supply +10V power (Reference: GND)	Maximum output current 20mA Maximum open circuit voltage reaches 12V
	24V	+24V Power	Supply +24V power (Reference COM)	Maximum output current 100mA
	GND	+10V Power	Analog signal and +10V power reference	Internal isolated with COM, +10V, A11, AO1 signal public terminal
	COM	+24V Power public terminal	Coordinate with other terminals for using	Isolated with GND
	PE	Isolated touching ground	Use for the ground connection of isolation layer of terminal wire, Simulate signal wire,485 communication wire, This terminal can be connected with the isolation layer of motor cable.	Internally connect with the PE of main circuit terminal

» Features Instruction:

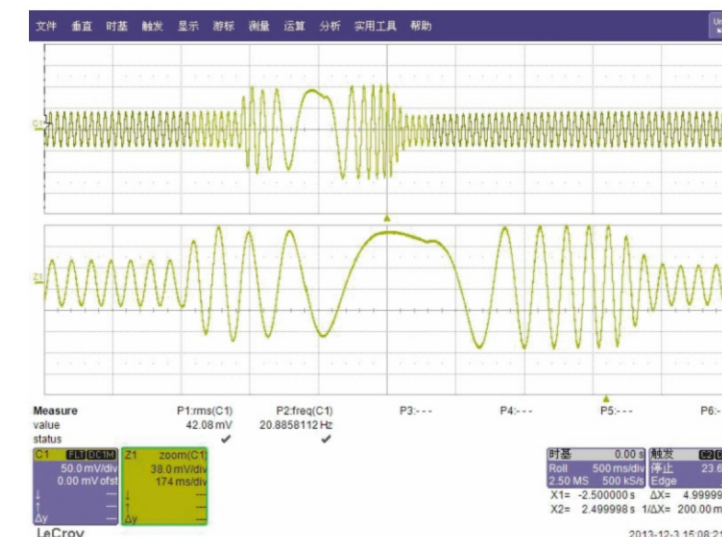
- Defined to be multi-functional switch of input terminal as well as high speed pulse input port, flexible combination between different input terminal.
- Rated input voltage: 380V-440V, 380V $\pm$ 20% fluctuation is allowed.
- Precision of stable speed: $\pm$ 0.2% under vector control, $\pm$ 0.5% under V/F control
Speed adjustment: 1:200 under vector control, 1:100 under V/F control.
- Dynamic torque repose time less than 20ms under vector control.
- Overload capacity of heavy load: 150% 60s, 180% 20s.
- Maximum output frequency is corresponding 4 times low intensity magnetic under vector control.

6000E integrated open loop vector control algorithm, excellent voltage and current control, strong load capacity, which guaranteed the quick response, stable running & high torque in low frequency for inverter.

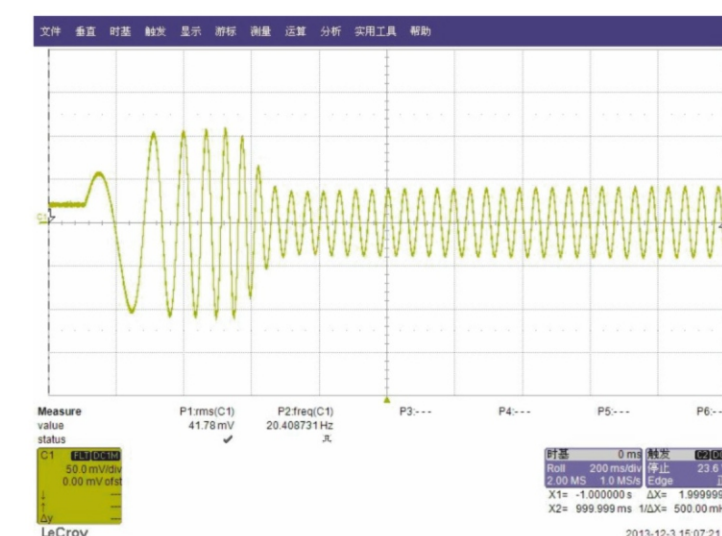
• 50Hz Current curve in stable running



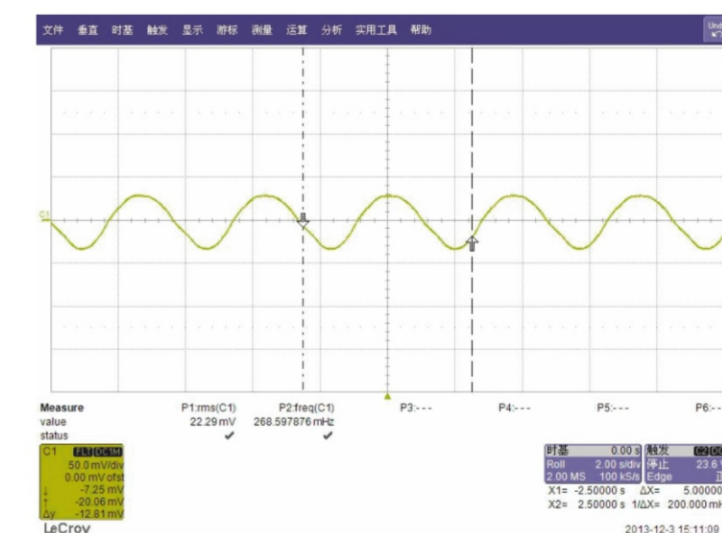
• Current wave form of positive and negative reverse



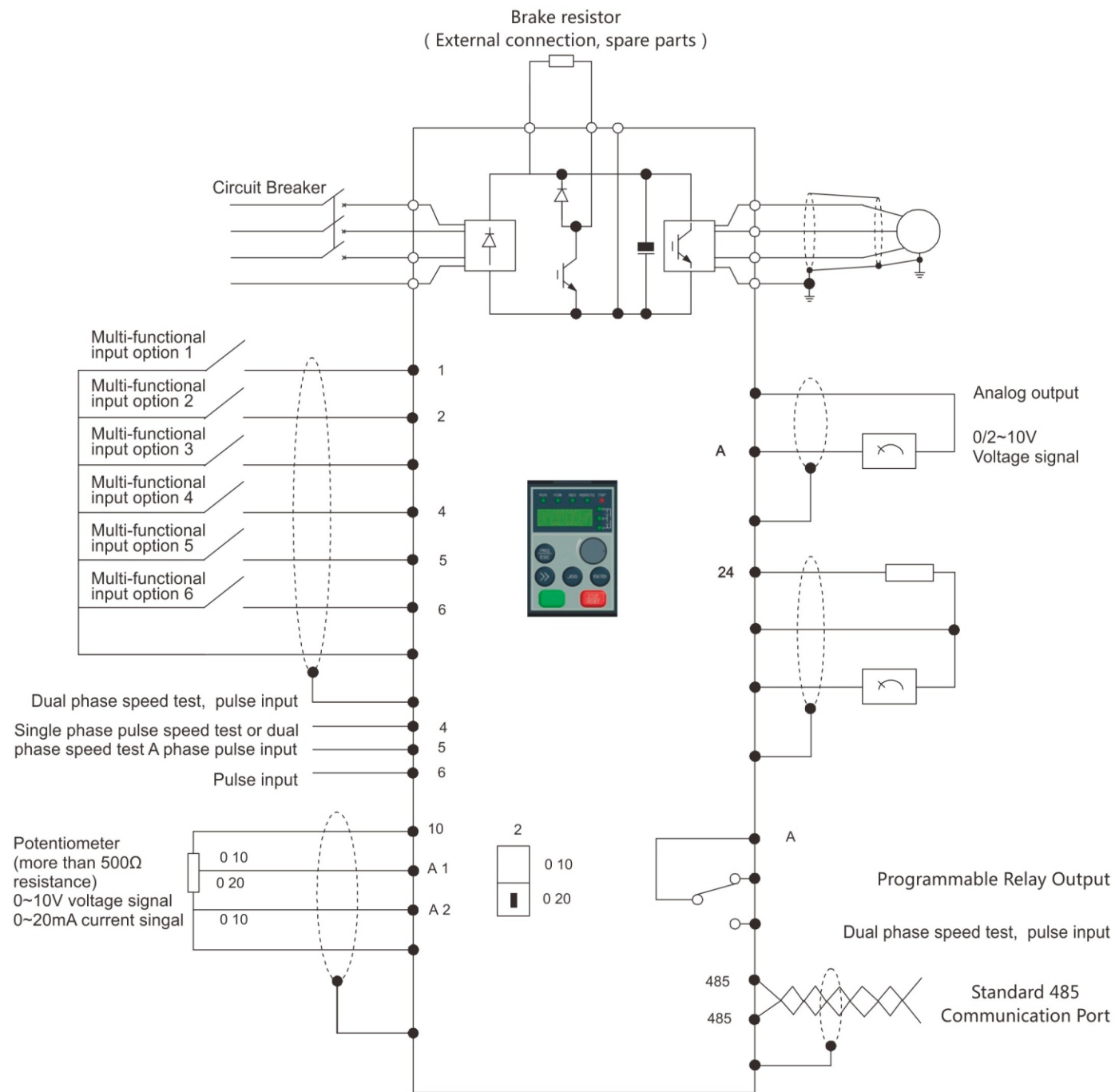
• 50Hz Accelerated current wave form



• Current wave form in 0.2Hz low frequency



» Connecting Diagram



Connection diagram for power S21R5GB, S22R2GB, 3R75GB or above

» Technical Specification

Subject	Specification
Rated input voltage, frequency	3 Phase 380V~440V, 50/60Hz
Allowed input voltage working scope	3 Phase 380V: 304V~456V, Voltage imbalance rate less than 3%, frequency less than +5%
Rated output voltage	0~Rated input voltage
Maximum overload current	Type G, 150%/min, 180%/20 Sec. Type P, 120%/min, 150%/sec
Control mode	VF/Current vector control
Frequency controlling scope	Low frequency mode : 0.00~650.00Hz, High frequency mode: 0.0~1000Hz
Frequency accuracy	Digital command: ±0.01%(-10°C~+40°C) Analog command: ±0.01%(15°C~35°C)
Set frequency resolution	Digital command: 0.01Hz Analog command: 1/1000 maximum frequency
Output frequency resolution	0.01 Hz
Frequency setting signal	0~10V, 0~20mA
Accelerating time	0.1~3600 Seconds
Braking torque	Additional braking torque up to 125%
Voltage / Frequency features	4 optional fixed VF features , and random VF feature setting with RG VF control
Protection	Over-voltage, Under-voltage, Current Limit, Over-current, Overload, Electronic thermal relay , Over-heat, over-voltage with stall, short circuit load, touch ground, under-voltage protection, input default phase, output default phase, short circuit of touch ground or phases, motor overload protection, etc.
Ambient temperature	-10°C~40°C
Humidity	5~95% RH
Storage	Storage -40°C~70°C
Working condition	Indoor without corrosive gas.
Installation	Altitude not higher than 1000 Meters without dust, corrosive gas and sunlight direct radiation
Vibration	Less than 5.9m/s²(0.6g)
Protection level	Ip20

» Specification and Parameter

Model	Voltage	Input Current(A)	Output Current(A)	Motor Power(kw)
6000M-S2R4GB	1 Phase 220V	5.1	2.4	0.4
6000M-S2R75GB		9.2	4.5	0.75
6000M-S21R5GB		13.1	7	1.5
6000M-S22R2GB		23	10	2.2
6000E-3R75GB/31R5PB	3 Phase 380V	3.7/5.4	2.5/4	0.75/1.5
6000E-31R5GB/32R2PB		5.4/7.0	4/6	1.5/2.2
6000E-32R2GB/3004PB		7.0/10.7	6/9	2.2/4
6000E-3004GB/35R5PB		10.7/15.5	9/13	4/5.5
6000E-35R5GB/37R5PB-N		15.5/20.5	13/17	5.5/7.5
6000E-37R5GB/3011PB		20.5/26.0	17/25	7.5/11
6000E-3011GB/3015PB-N		26.0/35.0	25/32	11/15
6000E-3015GB/3018PB-N		35.0/38.5	32/37	15/18.5
6000E-3018GB/3022PB-N		38.5/46.5	37/45	18.5/22
6000E-3022GB-N		46.5	45	22
6000E-3030P-N		46.5/62.0	45/60	22/30
6000E-3030G/3037P-N		62.0/76.0	60/75	30/37
6000E-3037G/3045P-N		76.0/92.0	75/90	37/45
6000E-3045G/3055P-N		92.0/113	90/110	45/55
6000E-3055G/3075P-N		113/157	110	55
6000E-3075G/3093P-N		157/180	152/176	75/93
6000E-3093G/3110P-N		180/214	176/210	93/110
6000E-3110G/3132P-N		214/256	210/250	110/132
6000E-3132G-N		256/307	250/300	132/160
6000E-3160P-N		256/307	250/300	132/160
6000E-3160G/3185P-N		307/350	300/342	160/185
6000E-3185G/3200P-N		350/385	342/380	185/200
6000E-3200G/3220P-N		385/430	380/426	200/220
6000E-3220G/3250P-N		430/500	426/480	220/250
6000E-3250G/3280P-N		500/548	480/520	250/280
6000E-3280G/3315P-N		548/625	520/600	280/315
6000E-3315G/3355P-N		625/710	600/680	315/355
6000E-3355G/3356P-N		710/760	680/750	355/400
6000E-3400G/3450P-N		760/830	750/820	400/450
6000E-3450G/3500P-N		830/910	820/910	450/500
6000E-3500G/3560P-N		910/970	910/950	500/560

» Spare Parts

Serial No	Part Name	Mode No	Description	Picture
1	Remote control box	KB6-LED08(big) KB6-LED11(small)	Optional keyboard, internal extra CPU, support parameter upload and download, improved anti-interference ability	
2	Key board extension cable	KB6-C020A	Extend the cable of keyboard	
3	Extension tray	635MP03-A(big) 631MP08-A(small)	Fix the keyboard on the door when extension needed	

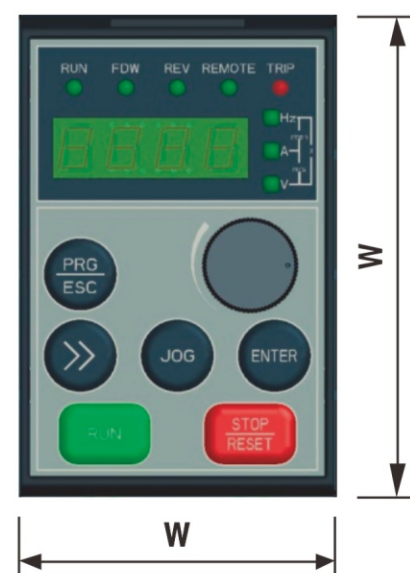
• Optional Functions

- **Revolving speed tracking function**
Machine that with power of 35R5GB/37R5PB or above could be equipped with this function, make remark when place order.
- **High-power built-in braking unit**
Optional built-in braking unit for machine that with power 3108G/3022P~3093G/3110P, Make remarks when placing order and add B after the model number

• Braking electric resistance and power chart

Voltage (V)	Motor Power (KW)	Electric Resistance (Ω)	Electric Resistance Power(KW)	Voltage (V)	Motor Power (KW)	Electric Resistance (Ω)	Electric Resistance Power(KW)
Single Phase 220	0.4	200	0.1	Three Phase 380	55	20/2	12
	0.75	150	0.2		75	13.6/2	18
	1.5	100	0.4		93	20/3	18
	2.2	75	0.5		110	20/3	18
Three Phase 380	0.75	300	0.4		132	20/4	24
	1.5	300	0.4		160	13.6/4	36
	2.2	200	0.5		185	13.6/4	36
	4	200	0.5		200	13.6/5	45
	5.5	100	0.8		220	13.6/5	45
	7.5	75	0.8		250	13.6/5	45
	11	50	1		280	13.6/6	54
	15	40	1.5		315	13.6/6	54
	18.5	30	4		355	13.6/7	63
	22	30	4		400	13.6/8	72
	30	20	6		450	13.6/9	81
	37	16	9		500	13.6/10	90
	45	13.6	9		560	13.6/10	90

• Keyboard

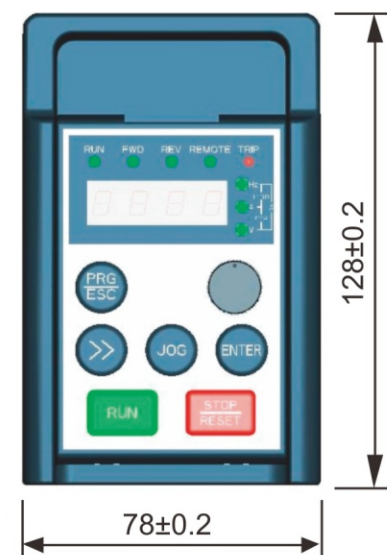


Keyboard installation measurement chart (mm)

Specification	w	d
S2R4GB~S22R2GB ; 3R75GB~3004GB	49±0.2	76.5±0.2
35R5GB and above	61±0.2	96.5±0.2

Remark:
There are 2 types of keyboard with same size : normal keyboard and remote control box.

• Keyboard Tray



Extension tray
installation size (mm)

» Appearance Size and Installation Size

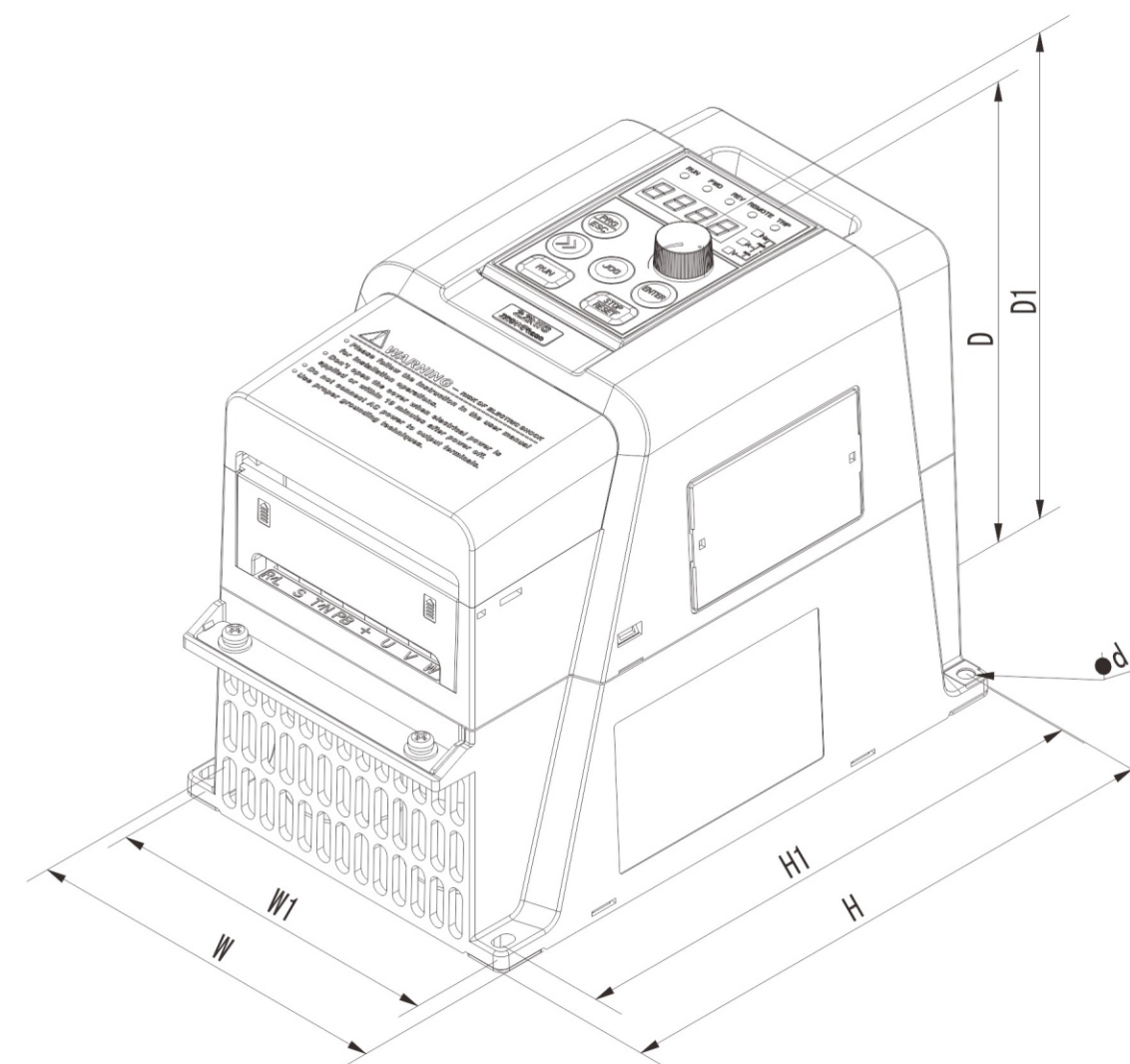


Chart A1-1 Appearance Size(mm)

Specification	H	H1	W	W1	D	D1	d
S2R4GB~S2R75GB	145	135	90	82	125	135	4.5
S21R5GB~S22R2GB 3R75GB/31R5PB~32R2GB/3004PB	198	175	120	110	150	160	4.5
3004GB/35R5PB	210	182	130	119	162	172	4.5
35R5GB/37R5PB~37R5GB/3011PB	255	238	180	166	174	183	7

» Appearance Size and Installation Size

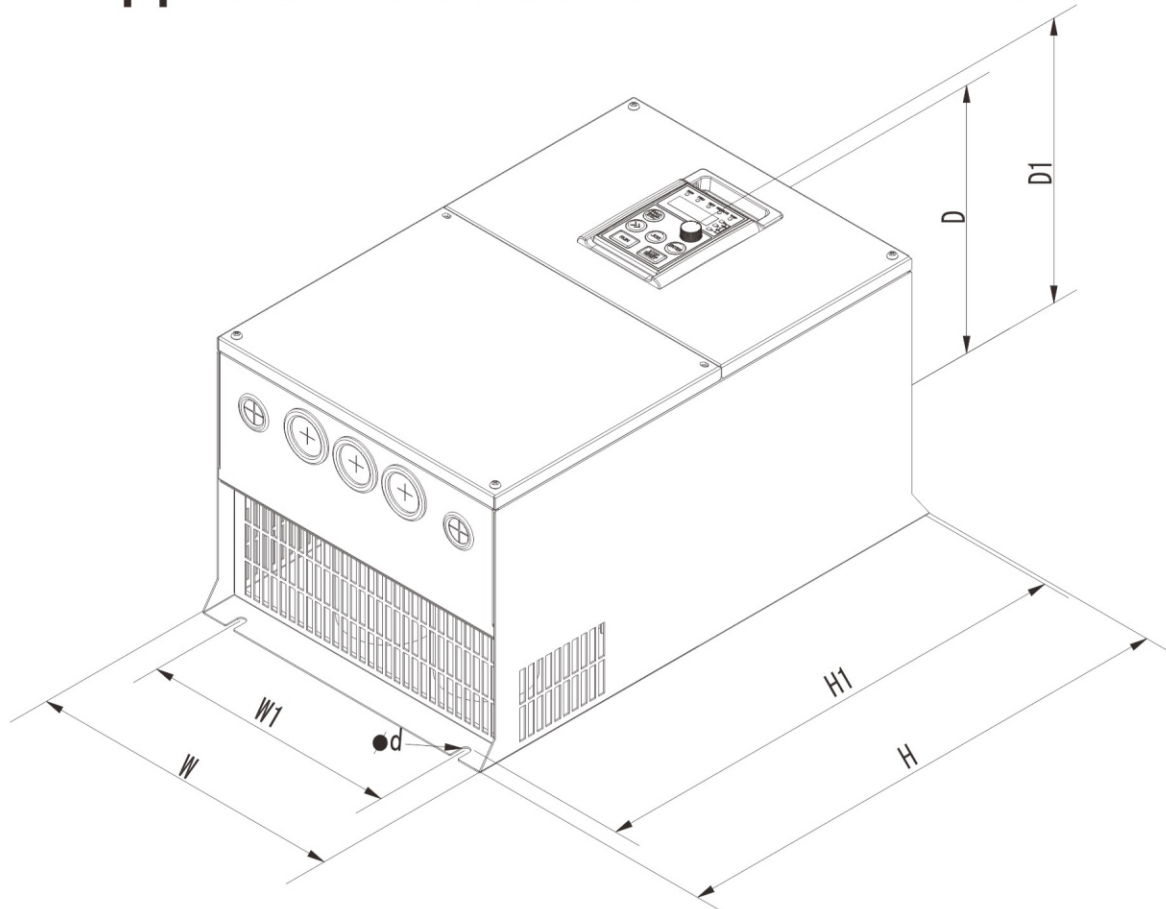


Chart A1-2 Appearance Size(mm)

Specification	H	H1	W	W1	D	D1	d
3011GB/3015PB~3015GB/3018PB	375	360	235	193	184	199	8
3018G/3022P~3030G/3037P	460	440	285	230	238	253	8
3037G/3045P	535	512	320	180	230	248	8
3045G/3055P~3055G/3075P	540	522	360	230	274	292	8
3075G/3093P~3093G/3110P	657	630	438	318	280	299	10
3110G/3132P~3160G/3185P	809	782	520	420	360	379	10
3185G/3200P~3220G/3250P *	907	878	600	420	385	404	12
3250G/3280P~3355G/3400P *	1210	1179	800	600	412	430	14

Note: Standard bottom for 3185G/3200P~3355G/3400P, the bottom is removable if wall mounting is necessary. ChartA1-2 is the size after bottom removed

» Appearance Size and Installation Size

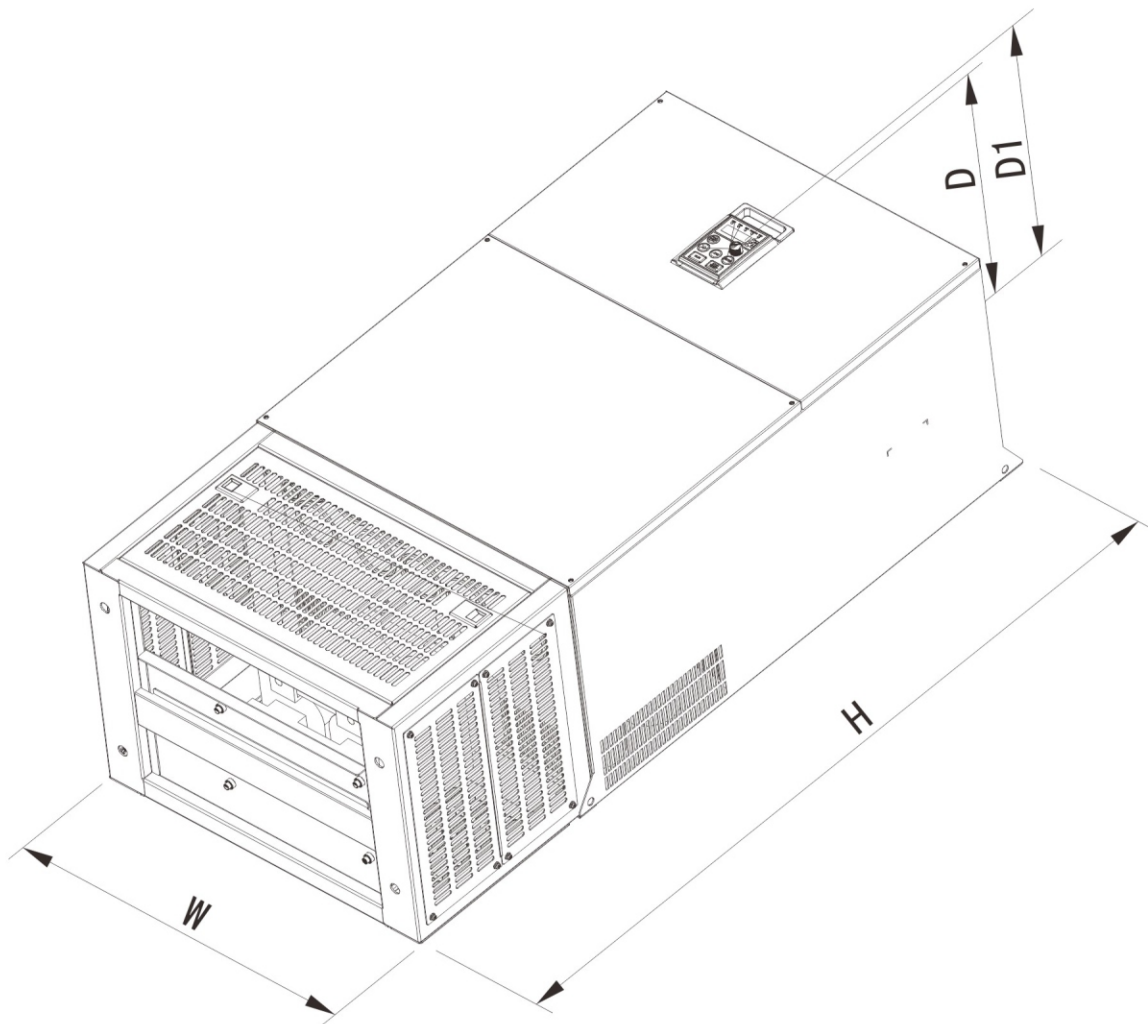


Chart A1-2 Appearance Size(mm)

Specification	H	W	D	D1
3075G/3093P~3093G/3110P *	933	438	280	299
3110G/3132P~3160G/3185P *	1100	520	360	379
3185G/3200P~3220G/3250P	1224	600	385	404
3250G/3280P~3355G/3400P	1608	800	412	430
3400G/3450P~3500G/3560P *	1800	1000	480	498

Remark:
 * Optional bottom for 3075G/3093P~3160G/3185P, please make remark when placing the order if bottom is required. Refer to chartA1-3 for device with bottom.
 * Wall mounting not allowed for 400G or above.