Frequency inverter·PLC·Servo

EN500/EN600 High Performance Flux Vector Control Inverter

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About us

Company introduction

Shenzhen Encom Electric Technologies CO., LTD is a state-level high-tech enterprise with independent intellectual property rights, focusing on industrial automation products' development, production and sales. The main products include frequency inverter/ac drive, servo controller, PLC, new energy systems.

ENC company was established in 2004, has passed ISO9001: 2008 quality management system certification and the European Union CE certification, won the National Innovation Fund, the Shenzhen strategic emerging industries fund, product innovation award, the most investment value award and repeatedly won "China top ten low-voltage inverter domestic brands" title.



1. Won National Innovation Fund enterprise, China's high-tech enterprise
2. Repeatedly won "China top ten domestic brands"title
3. With more than 13 years of rich experience R&D team
4. With completely independent intellectual property rights, has dozens of patents
5. Master the world's leading asynchronous, synchronous vector control technology and torque control technology
6. ISO9001:2008 system certification unit, strict and standard information quality control system
7. Has more than 30 offices in China
8. ENC provide quality products and services for more than 30 countries' industrial user

Product introduction

Intelligent efficient reliable

EN500/EN600 adopts 32 bit DSP hardware platform and advanced control algorithm, can achieve PG closed loop vector control and open loop vector control without PG, along speed vector and torque vector mode. It can quickly limit the impact current and be widely used in high-end manufacturing. EN500/EN600 can achieve high precision control, fast response speed, good performance at low frequency, with intelligent detection and good protections. They have wide range of networking capabilities, rich peripheral bus expansion, terminal expansion, relay expansion, analog expansion, etc.

Typical application industry

EN500/EN600 is applied to metalworking, plastic machinery, CNC machine tools, printing equipment, printing and dyeing industry, paper making, municipal engineering, water supply project and sewage treatment and other industries. It is also widely demanded in the fields of textile, refrigeration, cement, ceramics, chemical industry, shipbuilding, mining and so on.

Sewage treatment

Textile machinery

CNC machine tools

Metal processing

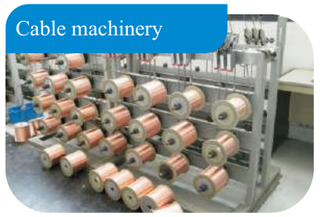
Ceramic machinery

Food machinery

Stone processing

Paper machinery

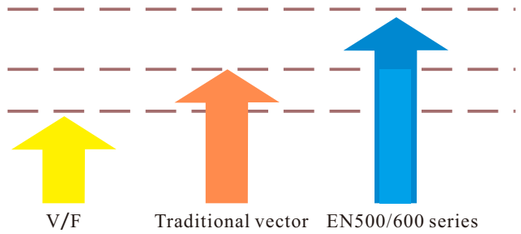
Cable machinery



Speed vector mode:

☐ Fast response, low frequency hi-torque output

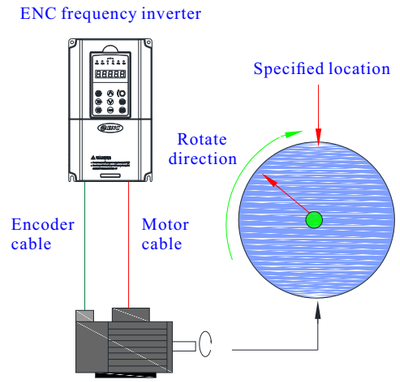
V/F control: 150% rated torque at 1.0Hz;
Traditional vector control: 150% rated torque at 0.5Hz;
EN500/EN600 PG vector control: 180% rated torque at 0Hz



Positioning control:

☐ Can run to original location or stop at the specified location

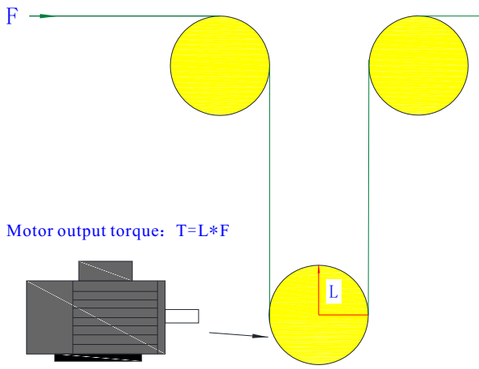
Point positioning relative to the Z axis angle: 0.00 ~ 360.00 degrees



Torque vector mode :

☐ Output adjustable torque

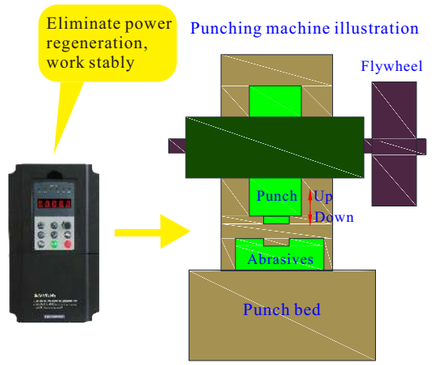
Torque control precision:
±10% rated torque (vector control, torque control);
±5% rated torque (PG vector control, PG torque control)
Torque response:
≤20ms (vector control);
≤10ms (PG vector control)



Recoil load applications:

☐ Eliminate the punching machine load's power regeneration in punching process due to reaction force.

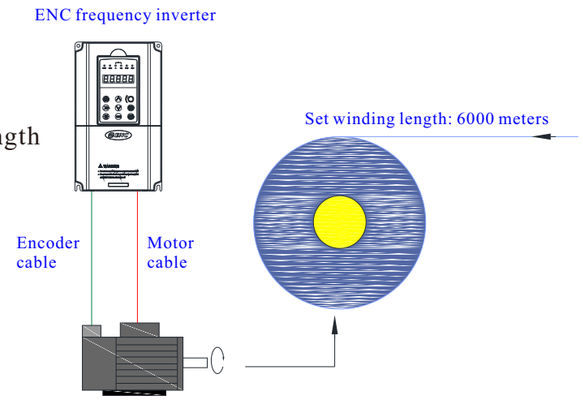
G type over loading capacity: 150% of rated current for 1 minute
Allowed volt.range: 1phase 220V grade 220~260V
Allowed volt.range: 3phase 380V grade 320~460V



Fixed-length control :

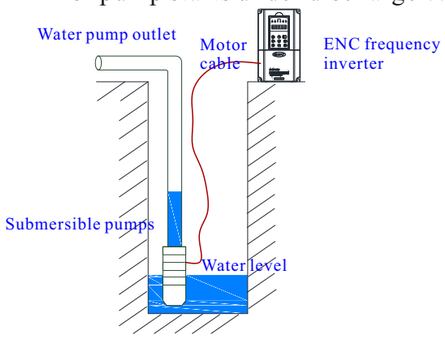
☐ Can work according to the set length

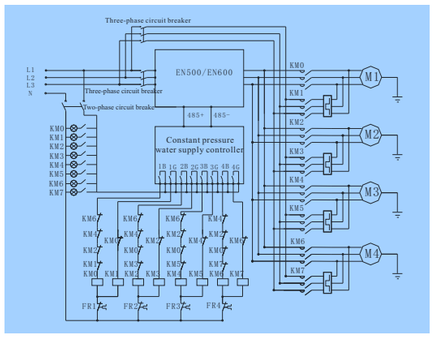
Accuracy: 0.001m
Length up to 65535m



Constant pressure water supply and waterless protection:

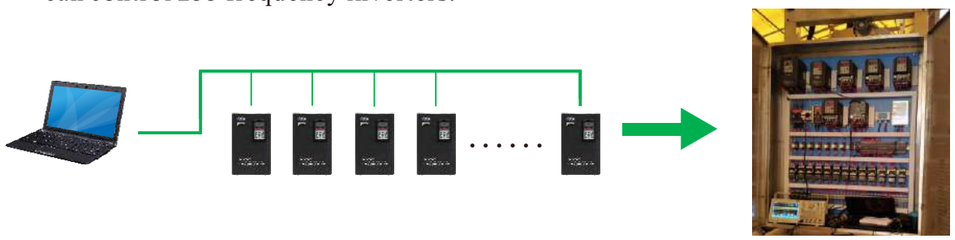
☐ Prevent damaging equipment when pump operates without load or pump starts under discharge valve closed





Personal computer control:

☐ Using desktop computers, laptop, or other personal computers as operating platform, only need to install we ENC monitor system software on your computer, then you can operate the frequency inverter, set the parameters, monitor the state. A computer can control 255 frequency inverters.

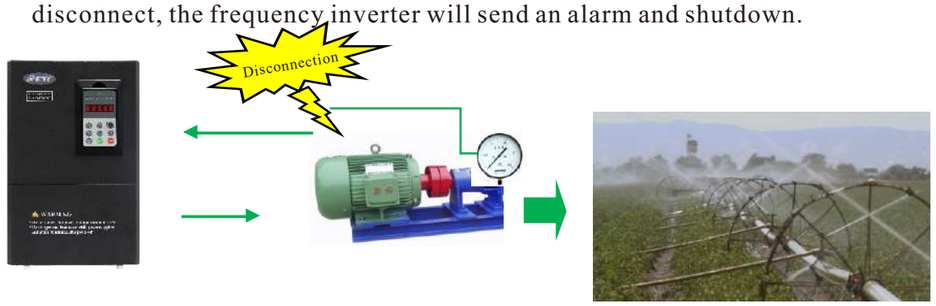


Instant power sway without halt:

☐ When unstable power grid causes power off or sway, you can choose this function and make frequency inverter work continuously.

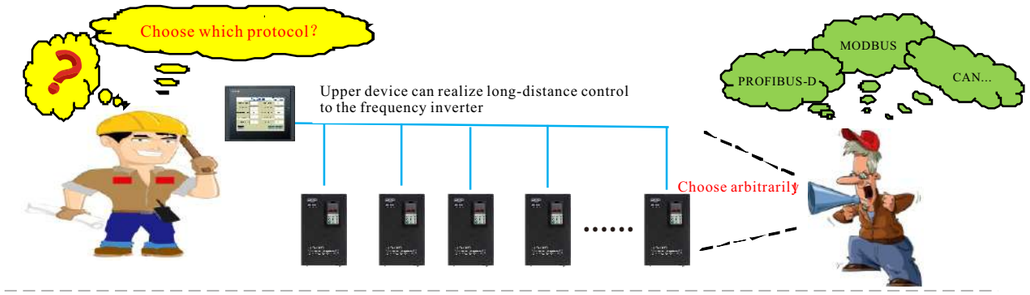
Disconnection detect function:

☐ Disconnection detect, under the constant pressure water supply application, if the external pressure gauge disconnect and cause the water pressure too high or even damage the pipe network, EN500/EN600 can detect the external pressure gauge. If disconnect, the frequency inverter will send an alarm and shutdown.



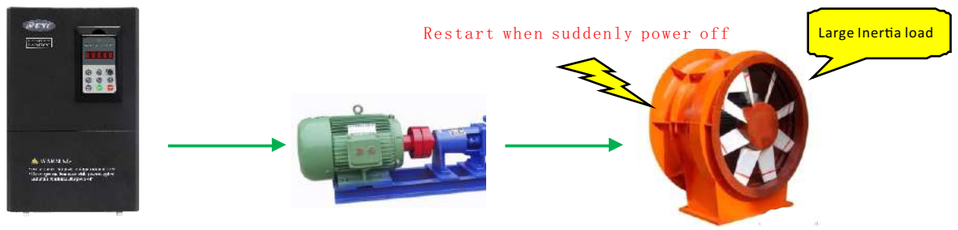
Rich communication protocol:

☐ EN500/EN600 has standard RS485 interface, can realize Modbus protocol, free protocol communication. In addition, expansion card PROFIBUS-DP, CANopen, CANlink are optional.



Speed tracking function:

☐ Starting the machine during rotation will generate electricity, usually very difficult to start and the inverted power generation could bring about some hazards. EN500/EN600 speed tracking function can avoid the hazards caused by inverted power generation

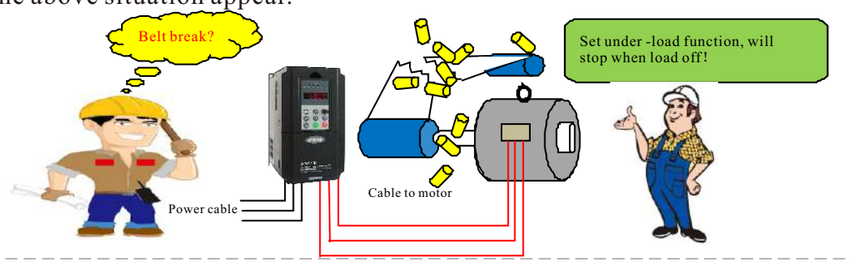


Keypad copy function:

☐ Using the parameter copy function, you can set all parameter into a frequency inverter and upload parameters to the keypad, then use the keypad to download the parameter to other devices, which can keep all parameters consistent!

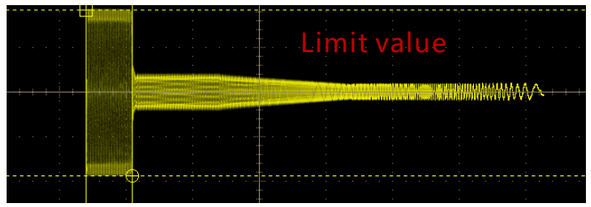
Under load protection:

☐ When load off or chain/belt break during normal work, usually need to make the frequency inverter immediately stop. Under these circumstances, this function will play a role. You can set EN600 under load protection and the under load point can be set according to your needs, then frequency inverter will automatically stop when the above situation appear.



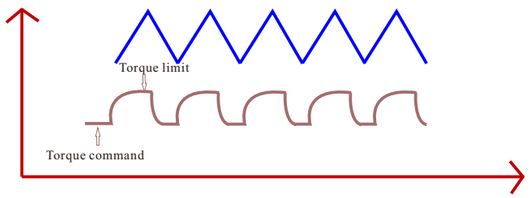
Rapid current limiting function:

☐ Rapid current limiting function can avoid frequency inverter frequently over current alarm. When the current exceeds the current protection point, this function can quickly limit the current within the current protection point, so as to protect equipment and avoid over current alarm due to suddenly load or unload.



Torque limit function:

☐ EN500/EN600 frequency inverter has torque limit function. When the torque command exceeds the maximum torque that the machine can withstand, the frequency inverter can limit the torque within the set maximum torque and protect equipment under the premise of maximizing mechanical efficiency.



Item			Item description
Input	Rated volt.,frequency		1 phase 200V-240V ±15% 3 phase 200V-240V ±15% 3 phase 380V-480V ±15%
	Rated input frequency		50/60Hz ±5%
Output	Voltage		0～supply voltage
	Frequency		0~600Hz
	Overloading capacity		G type:150% of rated current for 1 minute P type:120% of rated current for 1 minute
Control performance	Control mode		Vector control, PGVector control, Open-loop V/F control, torque control, PG torque control
	Speedstabilityaccuracy		±0.5% rated synchronous speed(vector control) ±0.1% rated synchronous speed(PG vector control) ±1% rated synchronous speed(V/F control)
	Speed range		1:2000(PG vector control) 1:100(vector control) 1:50(V/F control)
	Start-up torque		1.0Hz:150% rated torque(V/F control) 0.5Hz:150% rated torque(vector control) 0Hz:180% rated torque(PG vector control)
	Speed fluctuation		±0.3% rated synchronous speed(vector control) ±0.1% rated synchronous speed(PG vector control)
	Torquecontrol accuracy		±10% rated torque(vector control, torque control) ±5% rated torque(PG vector control, PG torque control)
	Torque response		≤20ms(vector control) ≤10ms (PG vector control)
	Frequency precision		Digital settled: max.frequency×±0.01%; Analog settled: max. frequency×±0.5%
	Frequency resolution	Analog setting	0.1% of max. frequency
		Digital settled precision	0.01Hz
		Exterior impulse	0.1% of max. frequency
	Torque boost		Automatic torque boost; manual torque boost 0.1~12.0%
	V/F curve(volt. Frequency Characteristics)		Setting rated frequency at the range of 5~650Hz, by choosing constant torque, degressive torque 1, degressive torque 2, degressive torque 3, user defined V/F curve in total 5 kinds of curve.
	Accelerationanddeceleration curve		2 modes:linear acceleration and deceleration and "S"acceleration and deceleration; 15 types of acceleration and deceleration time, the time unit (0.01s,0.1s,1s) is optional, the max. time is 1000 minutes
	Brake	Power consumption brake	The 15kw power and under power range with inbuilt brake unit, only need to added brake resistor between (+) and PB; The 18.5kw and up power rangeis possible to add brake unit between (+) and (-) outside; or extra connect brake unit with adding brake resistor between (+)and PB.EN500 series can connect brake unit between (+) and (-) outside.
		DC brake	Optional start and stop, action frequency 0~15Hz, action current 0~100%, action time 0~30.0s
	Jog		JOG frequency range: 0.00-upper limiting frequency JOG acceleration/deceleration time: 0.0-6000. 0s for setting
	Multi-section speed run		Realized by inbuilt PLC or control terminal; with 15section speed. Each section speed with separately acceleration and deceleration time; with inbuilt PLC can achieve reserve when power down.
	Inbuilt PID controller		Convenient to make closed-loop control system

Product technic index and spec

Item		Item description
Control performance	Automatic energysaving run	Optimize V/F curveautomatically to achieve energy-saving run according to the load status.
	Automatic voltage regulate(AVR)	Automatically keep output voltage constant, when the power grid voltage fluctuate
	Automatic current limiting	Current limited automatically under run mode in avoid of inverter over-current frequency to trip.
	Carrier modulation	Modulate carrier wave automatically according to the load characteristic.
	Speed tracking restart	Make rotating motor smooth start without shocking
Running function	Running command specified channel	Keypad specified, control terminal specified, communication specified can switch through various means
	Running frequency specified channel	Main and auxiliary specified to a realize one main adjusting and one fine control. Digital specified, analog specified, pulse specified, pulse-width specified, communication specified and others, which can be switched by many means at any time.
	Binding function	Run command channel and frequency specified channel can be bind together randomly and switch synchronously.
Inputand Output characteristic	Digital input channel	Channel8 for universal digital input, max. Frequency1KHZ, channel 1 can be used as pulse input channel, max. input 50KHz, which can be expanded to channel 14.
	Analog input channel	2 channel for analog input channel, AI1 can choose 4~20mA or0~10V as output, AI2 is differential input channel, 4~20mA or-10~10V for option, which can be expanded to channel 4 analog input.
	Pulse output channel	0.1~20KHZ pulse square signal output to achieve setting frequency, output frequency and other physical quantity output.
	Analog output channel	Channel 2 for analog signal output, AO1 can be 4~20mA or 0~10V, AO2 can be 4~20mA or 0~10V to achieve setting frequency, output frequency and other physical quantity output, which can be expanded to channel4 analog output.
Unique function	Rapid current limit	Limit inverter over current to the greatest point, and make it run more stably.
	Monopulse control	Suitable for working site where need one button to control inverter start and stop, first press to start, then press to stop, and that cycle repeats. It is very simple and reliable.
	Fixed length control	Realize fixed length control
	Timing control	Timing control: setting time range : 0.1-6500.0 minutes
	Virtual terminal	Five groups of virtual input &output IO can realize simply logical control.
Keypad	Keypad display	The parameters like setting frequency, output frequency, output voltage, output current can be displayed
	Button locked	Lock all or part of the buttons.
Protection function		Motor power on shot circuit test, input/output phase loss protection, over-current protection, over-voltage protection, undervoltage protection, overheat protection, overload protection, under load protection, relay absorption protection, terminal protection and non stop protection under power off.
Ambient	Use ambient	Indoor, not bare to sunlight, no dust, no corrosive gas, no flammable gas, no vapor, no water drop or salt etc.
	Altitude	Under 1000 meters.(above 1000meter require to reduce volume to use, output current reduce about 10% of rated current per 1000 meter increase)
	Environment temperature	-10°C to +40°C (environment temperature between 40°C - 50°C, need to reduce volume or strengthen heat sink)
	Environment humidity	Smaller than 95%RH, no drop condenses
	Vibration	Smaller than5.9m/s² (0.6g)
	Storage temperature	-40ºC~+70ºC
Structure	Defending grade	IP20
	Cooling mode	Forced air cooling and natural
Installation mode		Wall hanging and cabinet installation

Type explanation

EN600 - 4T 0015G / 0022P B

Code	Name
EN500 EN600	Series No.

Code	Volt.grade
2S	1 phase 220V
4T	3 phase 380V

Code	Constant torque general type motor power(KW)
0004	0.4
0007	0.75
...	...
5600G	560
6300G	630

Code	Accessories
B	Inbuilt brake unit

Code	Dedicated fan & pump motor power (KW)
0015P	1.5
0022P	2.2
...	...
6300P	630

Type selection

Input Voltage	Inverter type	Rated output Current(A)	Adaptable motor (KW)
1 phase 220V	EN600-2S0004	2.5	0.4
	EN600-2S0007	4	0.75
	EN600-2S0015	7	1.5
	EN600-2S0022	10	2.2
	EN600-2S0037	15	3.7
3 phase 380V	EN600 - 4T0007G/0015P	2.3/3.7	0.75/1.5
	EN600 - 4T0015G/0022P	3.7/5	1.5/2.2
	EN600 - 4T0022G/0037P	5/5.8	2.2/3.7
	EN600 - 4T0037G/0055P	8.5/13	3.7/5.5
	EN600 - 4T0055G/0075P	13/17	5.5/7.5
	EN600 - 4T0075G/0110P	17/25	7.5/11
	EN600 - 4T0110G/0150P	25/33	11/15
	EN600 - 4T0150G/0185P	33/39	15/18.5
	EN600 - 4T0185G/0220P	39/45	18.5/22
	EN600 - 4T0220G/0300P	45/60	22/30
	EN600 - 4T0300G/0370P	60/75	30/37
	EN600 - 4T0370G/0450P	75/91	37/45
	EN600 - 4T0450G/0550P	91/112	45/55

Input Voltage	Inverter type	Rated output Current(A)	Adaptable motor (KW)
3 phase 380V	EN600-4T0550G/0750P	112/150	55/75
	EN500-4T0750G/0900P	150/176	75/90
	EN500-4T0900G/1100P	176/210	90/110
	EN500-4T1100G/1320P	210/253	110/132
	EN500-4T1320G/1600P	253/304	132/160
	EN500-4T1600G/2000P	304/380	160/200
	EN500 - 4T2000G/2200P	380/426	200/220
	EN500 - 4T2200G/2500P	426/474	220/250
	EN500 - 4T2500G/2800P	474/520	250/280
	EN500 - 4T2800G/3150P	520/600	280/315
	EN500 - 4T3150G/3550P	600/650	315/355
	EN500 - 4T3550G/3750P	650/680	355/375
	EN500 - 4T3750G/4000P	680/750	375/400
	EN500 - 4T4000G/4500P	750/800	400/450
	EN500 - 4T4500G/5000P	800/870	450/500
	EN500 - 4T5000G/5600P	870/940	500/560
	EN500 - 4T5600G/6300P	940/1100	560/630
	EN500 - 4T6300G	1100	630

Note:(This information is for reference only. Please refer to the instruction manual. If there is any change in the product, no further notice will be given)

Type selection

Input Voltage	Inverter type	Packing size(cm)	G.W.(KG)
1 phase 220V	EN600-2S0004	26*17*22	2.5
	EN600-2S0007	26*17*22	2.5
	EN600-2S0015	26*17*22	2.5
	EN600-2S0022	26*17*22	2.5
	EN600-2S0037	30*21*25	4.5
3 phase 380V	EN600 - 4T0007G/0015P	26*17*22	2.5
	EN600 - 4T0015G/0022P	26*17*22	2.5
	EN600 - 4T0022G/0037P	26*17*22	2.5
	EN600 - 4T0037G/0055P	26*17*22	2.5
	EN600 - 4T0055G/0075P	30*21*25	4.5
	EN600 - 4T0075G/0110P	30*21*25	4.5
	EN600 - 4T0110G/0150P	38*26*29	6.5
	EN600 - 4T0150G/0185P	38*26*29	6.5
	EN600 - 4T0185G/0220P	49*33.5*29	15
	EN600 - 4T0220G/0300P	49*33.5*29	15
	EN600 - 4T0300G/0370P	53*36*32	20
	EN600 - 4T0370G/0450P	53*36*32	20
	EN600 - 4T0450G/0550P	62*38.5*36	29

Input Voltage	Inverter type	Packing size(cm)	G.W.(KG)
3 phase 380V	EN600-4T0550G/0750P	62*38.5*36	29
	EN500-4T0750G/0900P	69*46*56	48
	EN500-4T0900G/1100P	69*46*56	60
	EN500-4T1100G/1320P	78*52*56	80
	EN500-4T1320G/1600P	78*52*56	80
	EN500-4T1600G/2000P	110*60*60	125
	EN500 - 4T2000G/2200P	115*62*60	145
	EN500 - 4T2200G/2500P	115*62*60	145
	EN500 - 4T2500G/2800P	150*82*65	225
	EN500 - 4T2800G/3150P	150*82*65	225
	EN500 - 4T3150G/3550P	150*82*65	225
	EN500 - 4T3550G/3750P	164*82*65	255
	EN500 - 4T3750G/4000P	164*82*65	255
	EN500 - 4T4000G/4500P	164*82*65	255
	EN500 - 4T4500G/5000P	181*101*80	330
	EN500 - 4T5000G/5600P	181*101*80	335
	EN500 - 4T5600G/6300P	181*101*80	370
	EN500 - 4T6300G	181*101*80	380

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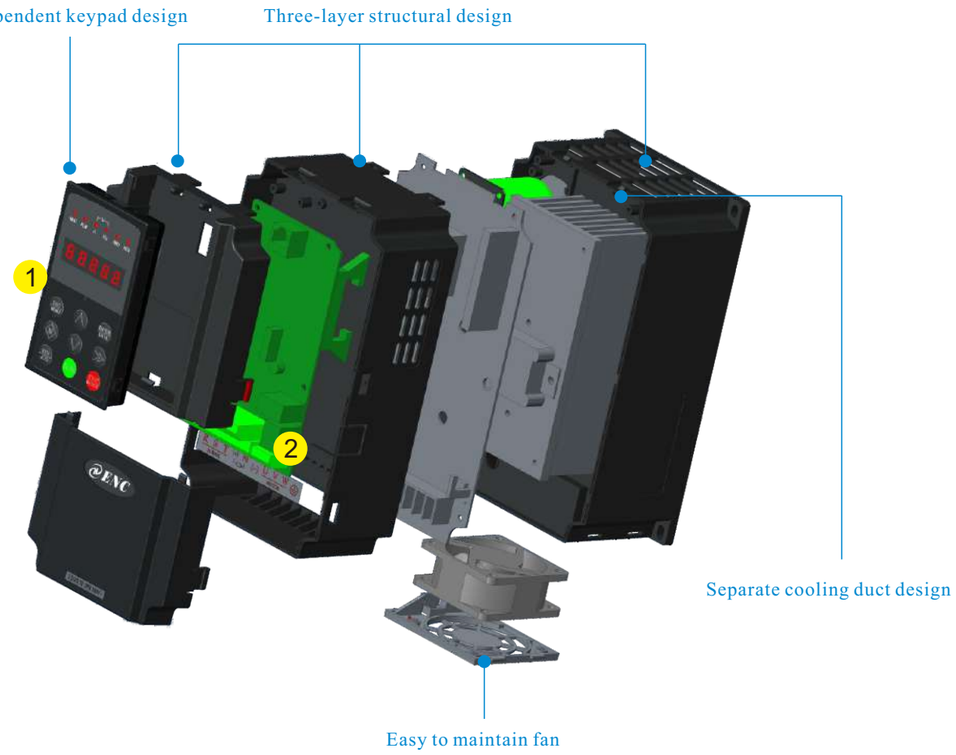
1 Keyboard

EN-LED 3-D　EN-LED 4-D　EN-LCD 1　EN-LED 1　EN-LCD 2

2 Rich expansion card

CANlink　CANopen　EN-PG 01/02/03　I/O　PROFIBUS-DP 01/02　Constant pressure water supply

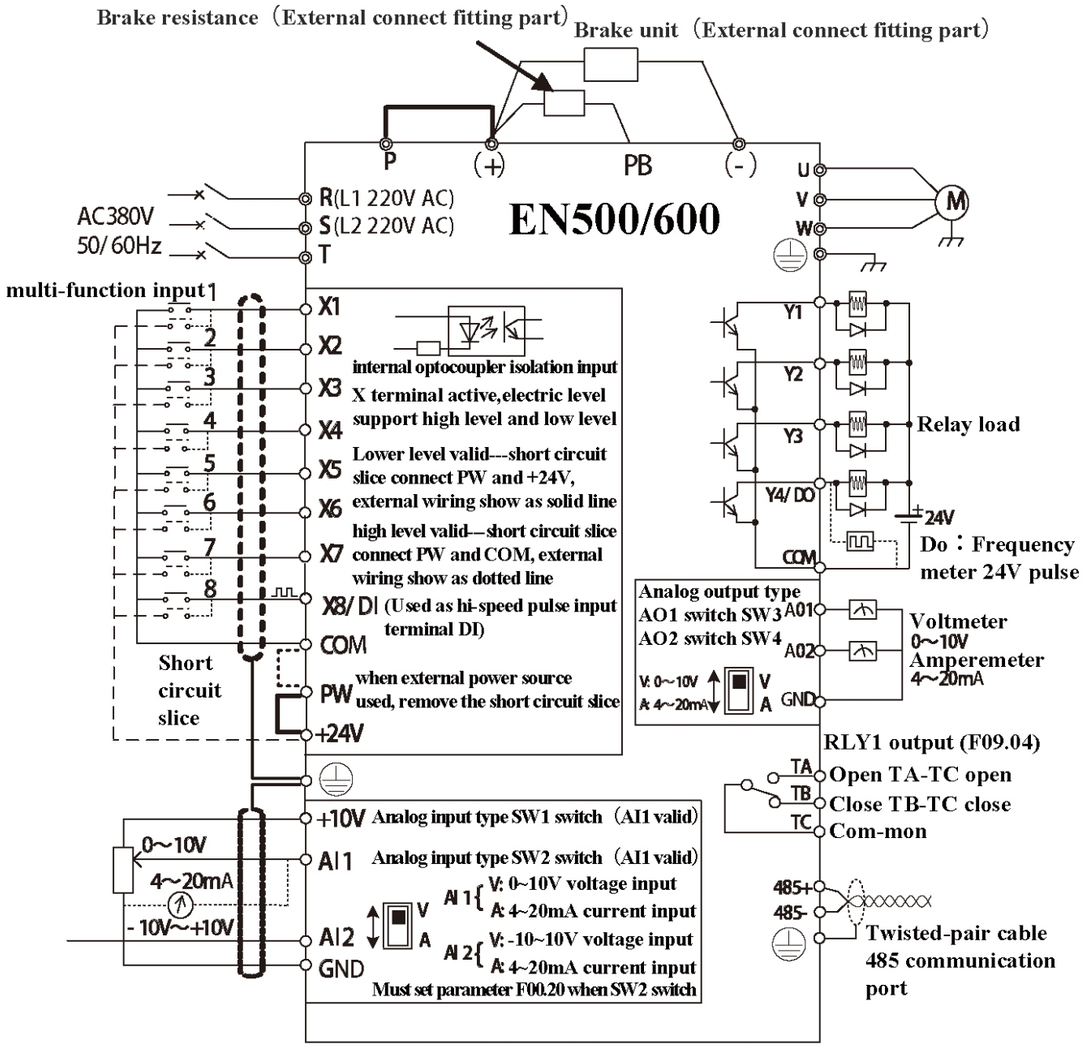
Product architecture



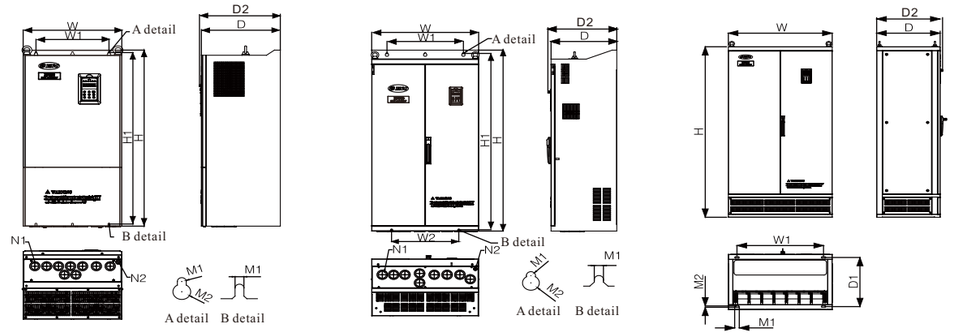
Accessories

Name	Model	Description	Remark
Keyboard	EN-LED3-D	Local LED single-display digital potentiometer keyboard (with the function of parameter copy)	Standard
	EN-LED4-D	Local LED Double-display digital potentiometer keyboard (with the function of parameter copy)	Optional
	EN-LCD1	Local LCD keyboard(with the function of parameter copy)	Optional
	EN-LCD2	Remote control LCD keyboard (with the function of parameter copy)	Optional
	EN-LED1	Local LED single-display keyboard	Optional
Communication extension card	EN-PR01	PROFIBUS-DP communication card (use in 15kw and the below)	Optional
	EN-PR02	PROFIBUS-DP communication card (use in 15kw above)	Optional
	EN-CAN1	CANopen communication card	Optional
	EN-CAN2	CANlink communication card	Optional
Universal encoder expansion card	EN-PG01	Differentiator input PG card, encoder input signal not isolated(suitable for all series machine)	Optional
	EN-PG02	Differentiator input PG card, encoder input signal through the optocoupler isolation, stronger anti-interference ability (suitable for all series machine)	Optional
	EN-PG03	Oc input PG card, encoder input signal through the optocoupler isolation	Optional
Integration expansion card	EN-PRPG01	PROFIBUS-DP and OC output PG integration expansion card (apply to 5.5 kw inverter and above power)	Optional

Wiring diagram



EN500 outer dimension

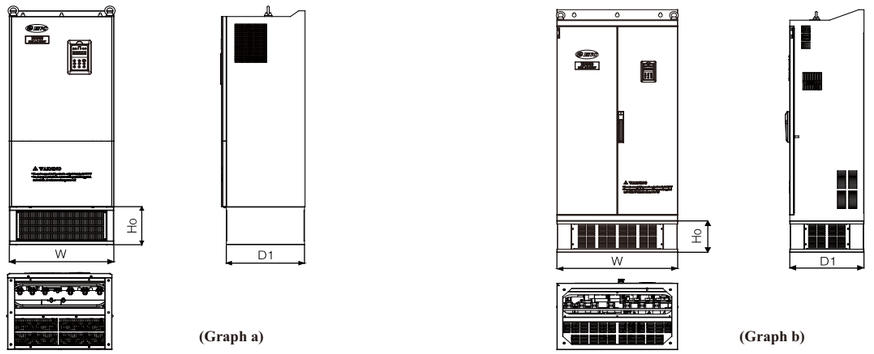


(Graph a) (Graph b) (Graph c)

EN500 mounting size

Inverter type	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	D1 (mm)	D2 (mm)	N1 (mm)	N2 (mm)	M1 (mm)	M2 (mm)	Figure number
EN500-4T0750G/0900P	570	546	340	237	-	320	-	333	-	-	Φ12	Φ18	Graph a
EN500-4T0900G/1100P													
EN500-4T1100G/1320P	650	628	400	297	-	340	-	353	-	-	Φ12	Φ18	
EN500-4T1320G/1600P			420										
EN500-4T1600G/2000P	980	953	480	370	-	400	-	413	Φ38	Φ19	Φ9	Φ18	
EN500-4T2000G/2200P	1030	1003	500	370	-	400	-	413	Φ38	Φ19	Φ9	Φ18	
EN500-4T2200G/2500P													
EN500-4T2500G/2800P	1368	1322	700	500	440	430	-	443	Φ52	Φ19	Φ12	Φ22	Graph b
EN500-4T2800G/3150P													
EN500-4T3150G/3550P													
EN500-4T3550G/3750P	1518	1483	700	500	500	430	-	443	OB 77*47	Φ19	Φ12	Φ22	
EN500-4T3750G/4000P													
EN500-4T4000G/4500P													
EN500-4T4500G/5000P	1650	-	850	700	-	550	490	563	-	-	40	Φ13	Graph c
EN500-4T5000G/5600P													
EN500-4T5600G/6300P	1700	-	900	750	-	550	490	563	-	-	40	Φ13	
EN500-4T6300G													

EN500 base outer dimension



(Graph a) (Graph b)

EN500 base size

Base model	W (mm)	D1 (mm)	Ho (mm)	Icon
SP-BS-0900	340	300	180	Graph a
SP-BS-0750-LI	340	300	350	
SP-BS-0750-LD				
SP-BS-0900-LI				
SP-BS-0900-LO				
SP-BS-1100	400	320	180	
SP-BS-1100-LI	400	320	380	
SP-BS-1100-LO				
SP-BS-1320	420	320	180	
SP-BS-1320-LI	420	320	380	
SP-BS-1320-LO				
SP-BS-1600	480	380	180	
SP-BS-1600-LI	480	380	400	
SP-BS-1600-LO				
SP-BS-2200	500	380	200	

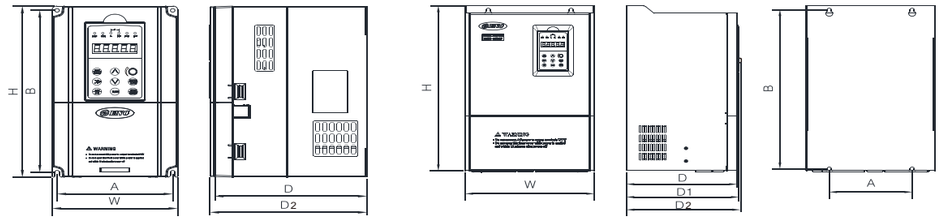
Base model	W (mm)	D1 (mm)	Ho (mm)	Icon
SP-BS-2000-LI	500	380	400	Graph a
SP-BS-2000-LO				
SP-BS-2200-LI				
SP-BS-2200-LO				
SP-BS-4000	700	430	204	Graph b
SP-BS-2500-LI	700	430	400	
SP-BS-2500-LO				
SP-BS-2800-LI				
SP-BS-2800-LO				
SP-BS-3150-LI				
SP-BS-3150-LO				
SP-BS-4000-LI	700	430	450	
SP-BS-4000-LO				

Note:(This information is for reference only. Please refer to the instruction manual. If there is any change in the product, no further notice will be given)

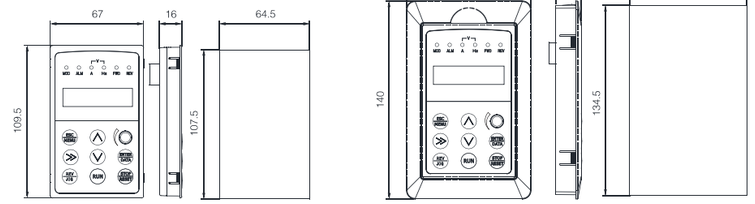
EN500 inverter and base selection (the base is optional)

Inverter type	Base model			
	Standard base	With input reactor	With output reactor	With DC reactor
EN500-4T0750G/0900P	SP-BS-0900	SP-BS-0750-LI	SP-BS-0900-LO	SP-BS-0750-LD
EN500-4T0900G/1100P		SP-BS-0900-LI	SP-BS-0900-LO	–
EN500-4T1100G/1320P	SP-BS-1100	SP-BS-1100-LI	SP-BS-1100-LO	–
EN500-4T1320G/1600P	SP-BS-1320	SP-BS-1320-LI	SP-BS-1320-LO	–
EN500-4T1600G/2000P	SP-BS-1600	SP-BS-1600-LI	SP-BS-1600-LO	–
EN500-4T2000G/2200P	SP-BS-2200	SP-BS-2000-LI	SP-BS-2000-LO	–
EN500-4T2200G/2500P		SP-BS-2200-LI	SP-BS-2200-LO	–
EN500-4T2500G/2800P	SP-BS-4000	SP-BS-2500-LI	SP-BS-2500-LO	–
EN500-4T2800G/3150P		SP-BS-2800-LI	SP-BS-2800-LO	–
EN500-4T3150G/3550P		SP-BS-3150-LI	SP-BS-3150-LO	–
EN500-4T3550G/3750P		SP-BS-4000-LI	SP-BS-4000-LO	–
EN500-4T3750G/4000P		SP-BS-4000-LI	SP-BS-4000-LO	–
EN500-4T4000G/4500P		SP-BS-4000-LI	SP-BS-4000-LO	–

EN600 outer dimension



(Graph a) (Graph b)



(Keyboard shape and hole size) (Keyboard mounting case shape and hole size)

EN600 mounting size

Inverter type	A (mm)	B (mm)	W (mm)	H (mm)	D (mm)	D1 (mm)	D2 (mm)	Mounting aperture	Figure number
EN600-2S0004	104	186	115	200	151	–	164	5	Graph a
EN600-2S0007									
EN600-2S0015									
EN600-2S0022									
EN600-2S0037	129	227	140	240	175	–	188	5	Graph a
EN600-4T0007G/0015P	104	186	115	200	151	–	164	5	Graph a
EN600-4T0015G/0022P									
EN600-4T0022G/0037P									
EN600-4T0037G/0055P									
EN600-4T0055G/0075P	129	227	140	240	175	–	188	5	Graph a
EN600-4T0075G/0110P									
EN600-4T0110G/0150P	165	281	180	304	189	–	202	6	Graph a
EN600-4T0150G/0185P									
EN600-4T0185G/0220P	180	382	250	398	210	214	223	9	Graph b
EN600-4T0220G/0300P									
EN600-4T0300G/0370P	180	434	280	450	240	244	253	9	Graph b
EN600-4T0370G/0450P									
EN600-4T0450G/0550P	190	504. 5	290	530	250	254	263	9	Graph b
EN600-4T0550G/0750P									

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