Variable Frequency Drive



Shenzhen Epsivo Technology Co., Ltd.

ABOUT EPSIVO

Shenzhen Epsivo Electric Co., Ltd., established in 2013, is a national high-tech enterprise focusing on the R&D, manufacturing, sales, and service of industrial drive products. It is also recognized as a Shenzhen Double-software certified enterprise and a Shenzhen specialized and sophisticated Enterprise. With independently owned intellectual property rights in industrial automation drive technology, Epsivo operates with a business model centered on rapidly providing customers with standard products and personalized customized services. It is committed to becoming a world-class provider of integrated solutions for industrial automation and drive systems.

Epsivo has mastered leading technologies in synchronous/asynchronous motor electro-hydraulic servo drive, variable frequency vector control, and solar pump drive. Its main products include servo drives, general purpose variable frequency drives, and solar pump inverters. These products cover voltages of 220V, 380V, and 460V, with power ranging from 0.4kW to 710kW. They are widely used in various industries, including injection molding machines, hydraulic presses, hydraulic stations, shoe-making machines, metal balers, film blowing machines, brick machines, and others. Epsivo has obtained nearly 30 patents from the China National Intellectual Property Administration. Simultaneously, it has established a high-standard quality supervision system and has comprehensively passed the IS09001 quality system, ISO14001 environmental management system, ISO45001 occupational health and safety management system, CE certification, and other certifications.





Epsivo is committed to becoming an outstanding supplier in the field of drive and control. With a team spirit of proactive advancement, steady improvement and accumulation of research and development strength, and efficient execution capabilities in the supply chain, it is committed to customizing more competitive solutions for various equipment manufacturing enterprises and automation products in segmented industries, continuously helping enterprises increase productivity, reduce costs, maximize corporate benefits, and promote the mutual growth of corporate and customer values.





ES500A

High Performance VFD



ES500A is a versatile high-performance VFD of Epsivo with optimized vector variable-frequency technology. With its high-performance current vector technology, it can easily drive a wide range of asynchronous and permanent magnet synchronous motors. The technical and performance problems encountered in applications such as cable, machine tool, metal product, petrochemical, natural gas, lifting equipment, papermaking, textiles, printing and dyeing, and ceramics can be easily solved.

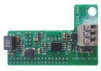
AC 3PH 220V~240V 0.75~200kW

AC 3PH 380V~415V 0.75~710kW

ES500A

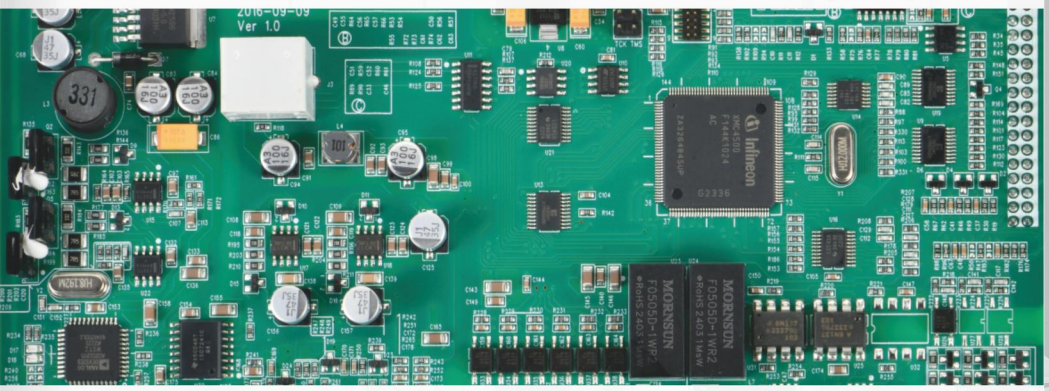
High Performance VFD

Optional accessories

Type	Order Code	Model	Description	Compatible Models	Image	Remarks
DC Reactor			15-37KW inverters come with built-in DC reactors; 45-400KW models offer optional external ones.	Optional		Subject to the actual product.
Brake Unit	99050001	ES100-110	External brake unit for inverters above 90KW	Brake Unit - 110KW		
Function Expansion Card		ES50IO1	Expansion Resources: 5xD1.1 xA1, 1xRelay 1xDO, 1xAO, 1xModbus/CANink	Optional		
		ES50IO2	Expansion Resources: 3×DI	Optional		
		ES50IO3	Expansion Resources: 3×DI, 1xRelay,1xModbus	Optional		
		ES50PC1	The user-programmable expansion card adopts the same programming method as Inovance H1U Series PLC	Optional		
Communication Expansion Card		ES50TX1	Isolated Modbus Adapter	Optional		
		ES50CAN1	CANlink Adapter	Optional		
		ES50CAN2	CANopen Adapter	Optional		
		ES50DP2	PROFIBUS-DP Card	Optional		
		ES500-PN1	PROFINET Fieldbus Adapter	Optional		
		ES500-ECAT	EtherCAT Fieldbus Adapter	Optional		

Optional accessories

类型	订货编码	型号	描述	支持机型	图片	备注
PG Card	91020073	PG-03	Resolver-compatible PG Card, DB9 interface	选配		Subject to the actual product.
	91020079	PG-02-M	Optical Encoder PG Card, compatible with 5V power supply, DB15 interface	选配		
	91020152	PG-02B-24V	ABZ-Phase PG Card, compatible with 5V/12V/24V power supplies	选配		
外引键盘	96030007	External Keyboard	ES500A Series Finished Keyboard	MDKE500		
	14600011	Keyboard Base	ES300/500A Series Keyboard Base	Kz500		
外引键盘线缆	12070101	External Keyboard Cable	Network Cable - External Keyboard Extension Cable - 200CM	Optional		
	12070130	External Keyboard Cable	Network Cable - External Keyboard Extension Cable - 300CM	Optional		



ES500A

High Performance VFD

Product Features



1. Driving various motors

It supports vector control of AC asynchronous motors and synchronous motors, and supports vector control of permanent magnet synchronous motors without position feedback.



2. Excellent permanent magnet synchronous motor control performance

It drives permanent magnet synchronous motors smoothly and efficiently (including the PMSM without speed or rotor position sensors) to achieve higher energy efficiency;

Direct drive is possible on low-speed control industrial equipment, achieving higher energy efficiency and better control performance.



3. Optimized vector control technology, bringing breakthrough in motor control performance

SVC speed control ratio is increased to 1:1000; SVC replaces FVC when the output torque is greater than 10%; SVC winding and unwinding torque accuracy is ≤ 5%.



4. High-performance vector control, improving equipment accuracy

The maximum output frequency of 500Hz achieved with vector control enables high-precision speed output within 10 times the weak magnetic speed regulation range.



5. Large torque at low speeds, improving the low-speed control performance

In the closed-loop vector mode, the linearity deviation of the torque line is within 3%; the torque output is stable, the low-frequency torque is large, and stable loaded operation at ultra-low speed and 0.01Hz can be achieved. The torque mode and speed mode can be easily switched.

6. Instantaneous power loss without shutdown

In the event of a momentary power failure or sudden voltage drop, the VFD reduces the output speed and compensates for the voltage drop by feeding energy back through the load, so as to maintain the drive in operation for a short period of time.

7. Built-in adaptive PID function module

Two built-in PID parameter groups can be automatically switched according to deviations, DI terminals and frequency conditions. The given and feedback sources are various and practical. The PID feedback loss detection function facilitates user to perform fault diagnosis.

8. Extensive expansion function cards

With modular design concept, ES500A has superb expansion functions. Users are free to select different communication cards, PG cards and other expansion cards according to their needs, for example, ModBUS / CANopen / EtherCAT communication card, differential / rotary / open collector PG card.

9. Industry application macro function

Designed for the special requirements for performance functions in industry applications, such as winding machines, winches, cranes, extruders and presses, the industry application macro function realizes the one-key initialization function, reducing the workload and technical requirements of the front-line debugging personnel.

10. Powerful upper computer monitoring software

Extensive background monitoring functions which facilitate on-site data collection and debugging; online oscilloscope function; batch uploading and downloading parameters; displaying Group U0 parameters in real time; and monitoring and diagnosis functions.

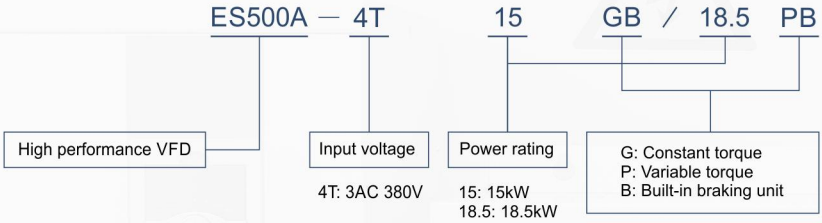
Application

Papermaking, lifting machinery, elevators, CNC machine tool, precision injection molding, metallurgy, mining, electric power, petroleum and chemical industry, which highly require speed control for synchronous motor driving or asynchronous motor driving.

ES500A

High Performance VFD

Model Description

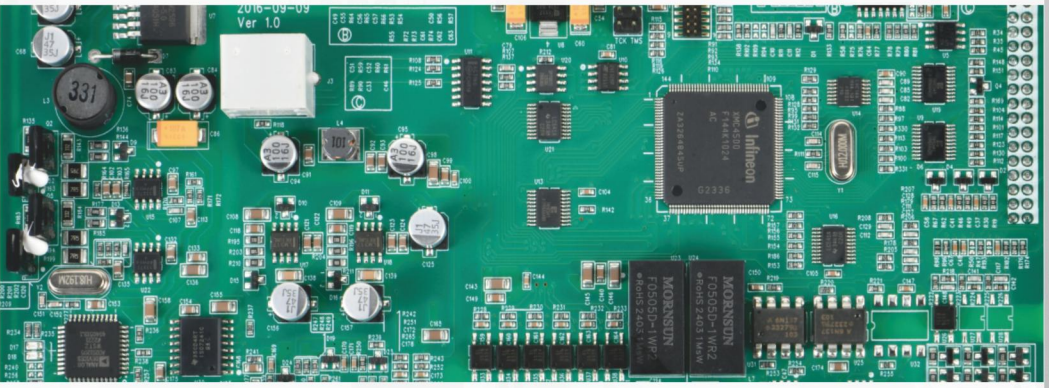


Selection Guide

Model	Motor		Rated Input Current (A)	Rated output Current (A)
	kW	HP		
3AC 380~415V±15%				
ES500A-4T0.75GB/1.5PB	0.75/1.5	1/2	3.4/5.0	2.1/3.8
ES500A-4T1.5GB/2.2PB	1.5/2.2	2/3	5.0/5.8	3.8/5.1
ES500A-4T2.2GB/3.7PB	2.2/3.7	3/5	5.8/10.5	5.1/9.0
ES500A-4T3.7GB/5.5PB	3.7/5.5	5/7.5	10.5/14.6	9.0/13
ES500A-4T5.5GB/7.5PB	5.5/7.5	7.5/10	14.6/20.5	13/17
ES500A-4T7.5GB/11PB	7.5/11	10/15	20.5/26	17/25
ES500A-4T11GB/15PB	11/15	15/20	26/35	25/32
ES500A-4T15GB/18.5PB	15/18.5	20/25	35/38.5	32/37
ES500A-4T18.5GB/22PB	18.5/22	25/30	38.5/46.5	37/45
ES500A-4T22GB/30PB	22/30	30/40	46.5/62.5	45/60
ES500A-4T30G/37P	30/37	40/50	62.5/76.0	60/75
ES500A-4T37G/45P	37/45	50/60	76.0/92.0	75/91
ES500A-4T45G/55P	45/55	60/75	92.0/113	91/112
ES500A-4T55G/75P	55/75	75/100	113/157	112/150

Selection Guide

Model	Motor		Rated Input Current (A)	Rated output Current (A)
	kW	HP		
3AC 380~415V±15%				
ES500A-4T90G/110P	90/110	125/150	180/214	176/210
ES500A-4T110G/132P	110/132	150/175	214/256	210/253
ES500A-4T132G/160P	132/160	175/210	256/307	253/304
ES500A-4T160G/185P	160/185	210/250	307/350	304/340
ES500A-4T185G/200P	185/200	250/260	350/385	340/377
ES500A-4T200G/220P	200/220	260/300	385/430	377/426
ES500A-4T220G/250P	220/250	300/330	430/468	426/465
ES500A-4T250G/280P	250/280	330/370	468/525	465/520
ES500A-4T280G/315P	280/315	370/420	525/590	520/585
ES500A-4T315G/350P	315/350	420/470	590/665	585/650
ES500A-4T350G/400P	350/400	470/530	665/785	650/725
ES500A-4T400G	400	530	785	725
ES500A-4T450G	450	600	840	820
ES500A-4T500G	500	660	880	860
ES500A-4T560G	560	750	980	950
ES500A-4T630G	630	840	1130	1100
ES500A-4T710G	710	950	1290	1250



ES500A

High Performance VFD

Technical Specifications

Technical Item		Specification
Basic function	Output frequency	Vector control: 0~500Hz V/f control: 0~3200Hz
	Control mode	V/f control Sensorless vector control (SVC) Close-loop vector control (FVC)
	Carrier frequency	0.8kHz~12kHz, automatically adjusted based on the load characteristics
	Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency * 0.025%
	Starting torque	G type: 0.5Hz/150% P type: 0.5Hz/100%
	Speed adjustment range	1:100 (SVC), 1:1000 (FVC)
	Speed stability accuracy	±0.5% (SVC), ±0.02% (FVC)
	Torque control response & precision	Response time: 5ms, precision: ±5% (FVC)
	Overload capacity	G type: 150% 60s; 180% 3s P type: 120% 60s; 150% 3s
	Torque boost	Automatic torque boost; manual torque boost 0.1%~30.0%
	V/f curve	Three types: linear, multiple point and square type (1.2 power, 1.4 power, 1.6 power, 1.8 power, square)
	V/f separation	2 modes: complete separation, half separation
	Acceleration/deceleration mode	Straight line/S curve; four kinds of acceleration/deceleration time, range: 0.1s~6500.0s
	DC braking	DC braking frequency: 0.00Hz~maximum frequency Braking time: 0.0s~36.0s Braking action current value: 0.0%~100.0%
	Jog control	Jog frequency range: 0.00Hz~50.00Hz Jog acceleration/deceleration time: 0.0s~6500.0s
	Simple PLC & multi-step speed operation	It can realize up to 16 steps speed via the built-in PLC function or control terminal
	Built-in PID	Built-in PID control to easily realize the close loop control of the process parameters (such as pressure, temperature, flow, etc.)
	Automatic voltage Regulation (AVR)	Automatically maintain a constant output voltage when grid voltage changes
	Common DC bus	Common DC bus for several inverters, energy balanced automatically
	Overvoltage & overcurrent stall control	Automatically limit the current and voltage during the operation, prevent frequent overcurrent and overvoltage trip

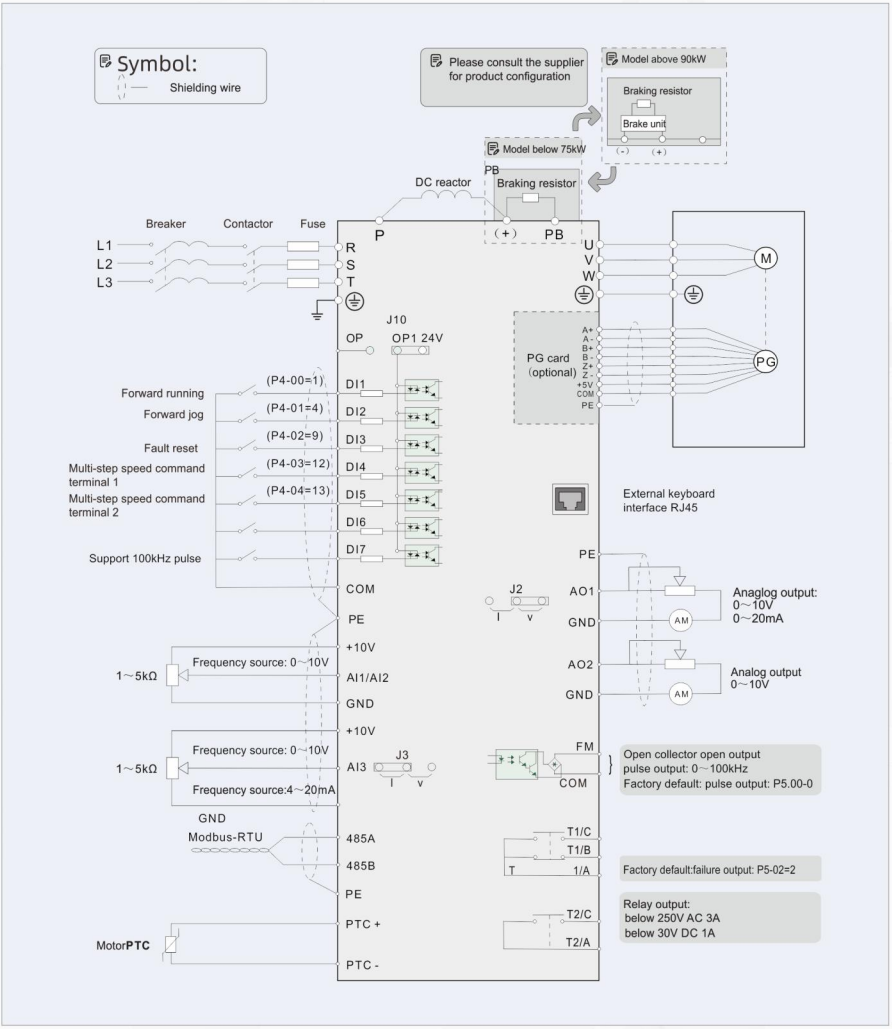
Technical Specifications

Technical Item		Specification
Basic function	Rapid current limit	Minimizing overcurrent fault, protect the normal operation of inverter
	Torque limit & control	"Excavator" characteristics, automatically limit the torque during the operation, prevent frequent overcurrent trip; torque control can be achieved on close-loop vector control mode.
	Fault protection function	Overcurrent, overvoltage, under-voltage, overheating, default phase, overload, short-circuit, etc., can record the detailed running status during failure & has fault automatic reset function
Individualized function	High performance	Can control the asynchronous motor and synchronous motor based on the high-performance current vector control technology
	Non-stop when instantaneous power off	The load feedback energy compensates the voltage reduction when instantaneous power off, so that the AC drive can continue to run for a short time
	Virtual IO	Five groups of virtual DI/DO can realize simple logic control
	Timing control	Time range: 0.0min~6500.0min
	Multi-motor switching	2 groups of motor parameters, arbitrary switching between 2 motors
	Communication protocol	Standard MODBUS (RS-485) and optional CANopen communication
	Multiple encoder support	It supports various encoders such as differential encoder, open-collector encoder and also support rotary transformer
Operation	Running command source	Keypad control Terminal control Serial communication control
	Frequency source	Digital setting, analog setting, pulse frequency setting, serial communication setting, multi-step speed setting & simple PLC, PID setting, etc. These frequency settings can be combined & switched in various modes
	Auxiliary frequency source	There are ten auxiliary frequency sources It can implement fine tuning and frequency synthesis
	Input terminal	7 digital input (DI1~DI7), DI7 supports max. 100 kHz high-speed pulse input 3 analog input: AI1 & AI2: 0~10V Ai3: 0~10V or 4~20mA
	Output terminal	1 output (FM), optional for open collector output or high-speed pulse output (0~100kHz) 2 relay output 2 analog output: AO1: 0~10V or 0/4~20mA Ao2: 0~10V
Environment	Altitude	Less than 1000m; rises each 1000m, derates 10% to use
	Ambient temperature	- 10℃~ + 40℃ (if 40℃~50℃, please derate to use)
	Humidity	Less than 95%RH, no water condenses
	Storage temperature	- 20℃~ + 60℃

ES500A

High Performance VFD

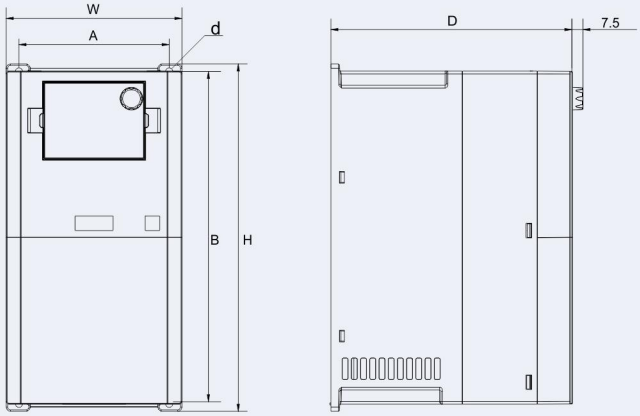
Wiring Diagram



Installation Dimensions

Es230 (Plastic Case)

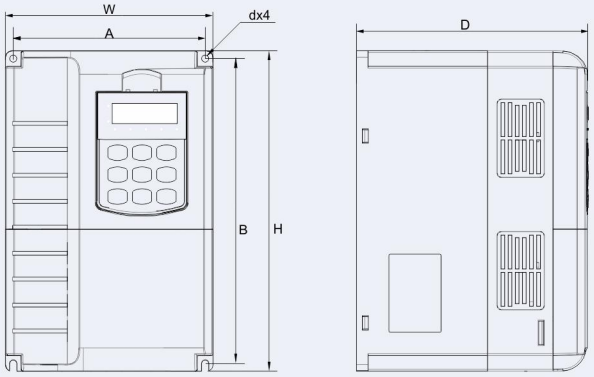
Structure code (Power range)	External Dimension (mm)			Installation Dimension (mm)		Installation aperture (mm)
	W	H	D	A	B	
E02(0.75-2.2kW)	85	170	128	157.5	67.5	Φ5.5
E03(3.7-5.5kW)	97	194	142.5	85	184	Φ4.7
E04(7.5-11kW)	124	245	170	106	233	Φ5



Installation Dimensions

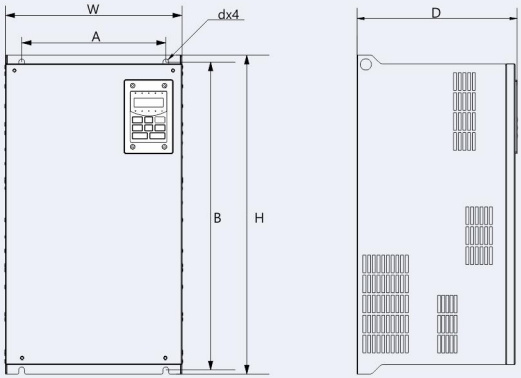
ES300/ES500A (Plastic Case)

Structure code (Power range)	External Dimension (mm)			Installation Dimension (mm)		Installation aperture (mm)
	W	H	D	A	B	
D01(0.75-3.7kW)	118	185	156.7	106.6	175.3	Φ4.5
D02(5.5-11kW)	160	247	178	148	235	Φ5.5



ES300/ES500A (Steel Case)

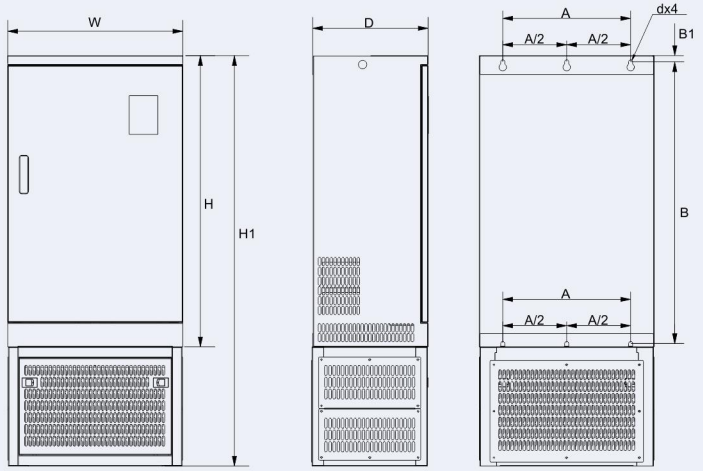
Structure code (Power range)	External Dimension (mm)			Installation Dimension (mm)		Installation aperture (mm)
	W	H	D	A	B	
D03(15-18.5kW)	217	335	194	140	324	Φ6
D04(22kW)	228	361	203.5	139	349	Φ6
D06(30-37kW)	285	463	224	235	447	Φ6
C07(45-55kw)	300	542	272	245	523	Φ10
D07(45-75kW)	305	613	294	200	592	Φ10
C08(75-110kw)	338	580	315	270	560	Φ10
D08(90-132kW)	400	753	293	280	731.5	Φ10
C09(132-160kW)	400	815	315	320	790	Φ11



Installation Dimensions

ES300/ES500A (Steel Case)

Structure code (Power range)	External Dimension (mm)				Installation Dimension (mm)			Installation aperture (mm)
	W	H	H1*	D	A	B	B1	
D09(160-220kW)	520	865	1219	343	380	836.5	18.5	Φ12
D10(250-400kW)	800	1172	1495	412	600	1143	19	Φ14
D11(450-710kW)	1080	N/A	1800	500	620	N/A	20	Φ12





- Headquarters
- Exported to more than 50 countries

With rich product lines, worldwide sales and service network, EPSIVO can always provide you fast support.

Professional Motor Drive Manufacturer

Epsivo

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