

LOW VOLTAGE INVERTER

FD300

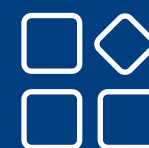


The FD300 series uses DSP control system as the platform, current vector control technology, and multiple protection methods, which can be applied to asynchronous motors to provide excellent driving performance.

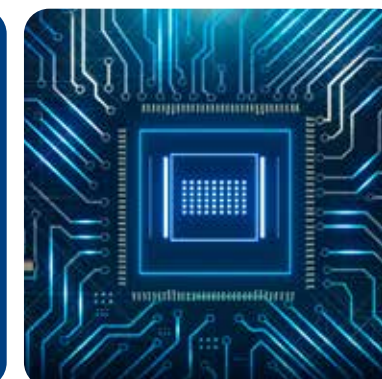
◆ Products features



Save space



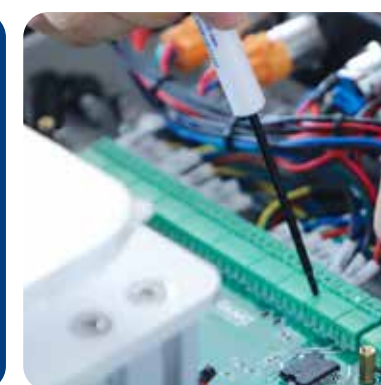
Modular structural layout

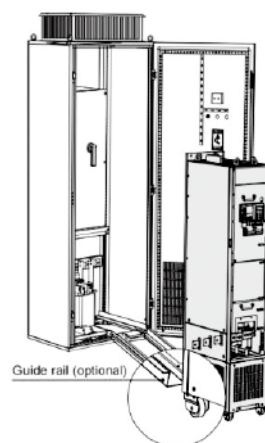


Widely applicable



Security protection

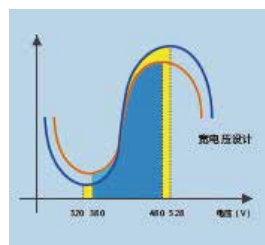




**Compact structure,
easy to cabinet,
space saving**

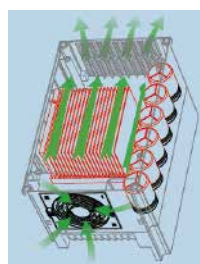
Wide voltage range design

Rated voltage: 380-440Vac
Rated frequency: 50/60Hz
Voltage fluctuation range: 320-485Vac
Unbalance degree: < 3%
Frequency range: 47-63Hz



Independent air duct design

Completely independent air duct,
truly achieving "up and down"
isolation.



Rich Expansion



- (1) Optional I/O card CANopen communication card Profibus DP communication card, isolated 485 communication card, and various types of PG cards can simultaneously meet various expansion card needs, quickly meeting personalized customer needs
- (2) Supports multiple encoder interfaces such as differential, rotary, and collector signals, enabling high-precision closed-loop vector control
- (3) Support external LCD keyboard for more convenient debugging operations

Performance improvement

Advanced motor drive technology enables efficient operation of synchronous and asynchronous motors



Rich motor identification methods

Efficient and fast motor parameter identification algorithm, supporting multiple self-learning methods, precise and consistent dynamic and static learning, without the need for manual adjustment, fully leveraging driving performance



Reliable braking performance

Integrated with various braking methods such as DC, magnetic flux, and short circuit, it can achieve safe and fast stopping of large inertia loads



No impact velocity tracking

The software automatically searches for motor speed and direction, enabling smooth and shock free starting of the motor at any speed



Stable low-frequency heavy-duty performance

In closed-loop vector mode, the low-frequency torque is high and the torque ripple is small, which can achieve stable load operation at extremely low speeds of 0.01Hz. The torque and speed modes can be smoothly switched online



Excellent motor control algorithm

New magnetic field oriented control algorithm with superior low-frequency and heavy-duty performance, improving torque control accuracy, New type of speed observer reduces motor parameter dependence and improves speed control stability

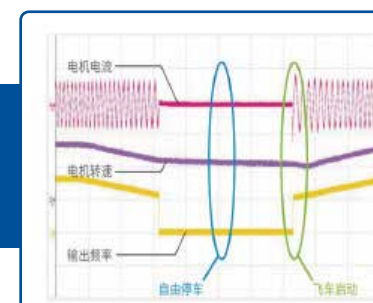


Accurate torque limitation

The characteristic of "excavator" is to limit torque output through high-precision torque limiting function, which can safely and effectively protect mechanical equipment in case of sudden load changes

Full band speed tracking

Full frequency speed tracking technology, smooth and impact free, effectively reducing motor and mechanical impacts, facilitating process implementation



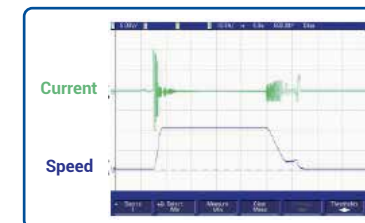
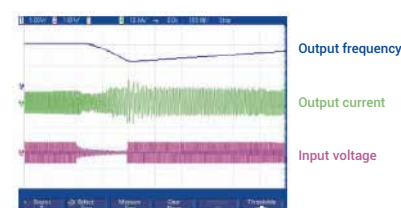
Integrating speed, torque, and position control

More precise and powerful motor torque, speed, and position control capabilities

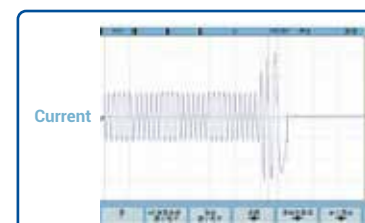
- (1) Position control performance - suitable for mechanical positioning applications
- (2) Torque and speed control performance - ensuring smooth mechanical operation, rapid response, and small torque fluctuations

Instant stop automatic frequency reduction function

When the power grid suddenly drops, the frequency converter can operate without stopping due to the feedback energy within an effective time, especially suitable for situations with high requirements for equipment operation continuity, such as chemical fiber and textile production lines.



Short circuit braking waveform of permanent magnet synchronous motor, acceleration time of 0.1s, deceleration time of 0.4s.
(Motor rated frequency 100Hz, short-circuit braking frequency 20Hz, braking time 0.5s)



Asynchronous motor space voltage vector control mode operating frequency 50Hz, with 100% rated load deceleration time of 0.1s, magnetic flux braking current waveform.

Integrating synchronous and asynchronous motor drives

Can drive various types of motors: direct drive motor, permanent magnet synchronous motor, electric spindle, synchronous reluctance motor, ordinary asynchronous motor, variable frequency motor, servo motor, etc



Energy consumption braking

High braking torque and fast braking speed. Suitable for frequent braking of large inertia loads. The braking unit and braking resistor must be configured.

Magnetic flux braking

No need to configure the braking unit and braking resistor, it can brake quickly. Suitable for fast parking situations with infrequent braking and high inertia loads. Not suitable for frequent braking of large inertia loads.

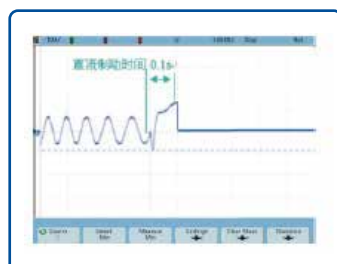
Provide multiple braking methods for quick parking

DC braking

Suitable for situations where the motor is running freely after braking and then starting; Suitable for situations where torque output needs to be maintained after braking to zero speed. Not suitable for frequent or rapid braking of large inertia loads.

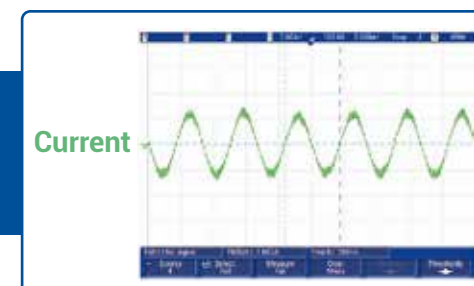
Short circuit braking

No need to configure the braking unit and braking resistor, it can brake quickly. Only suitable for permanent magnet synchronous motors in fast parking or braking before starting free running permanent magnet synchronous motors.



The current waveform of asynchronous motor space voltage vector control mode with 100% braking current, DC braking starting frequency of 10Hz, and braking time of 0.1s.

- ◇ Integrated synchronous and asynchronous drive
- ◇ Comprehensive open-loop and closed-loop control

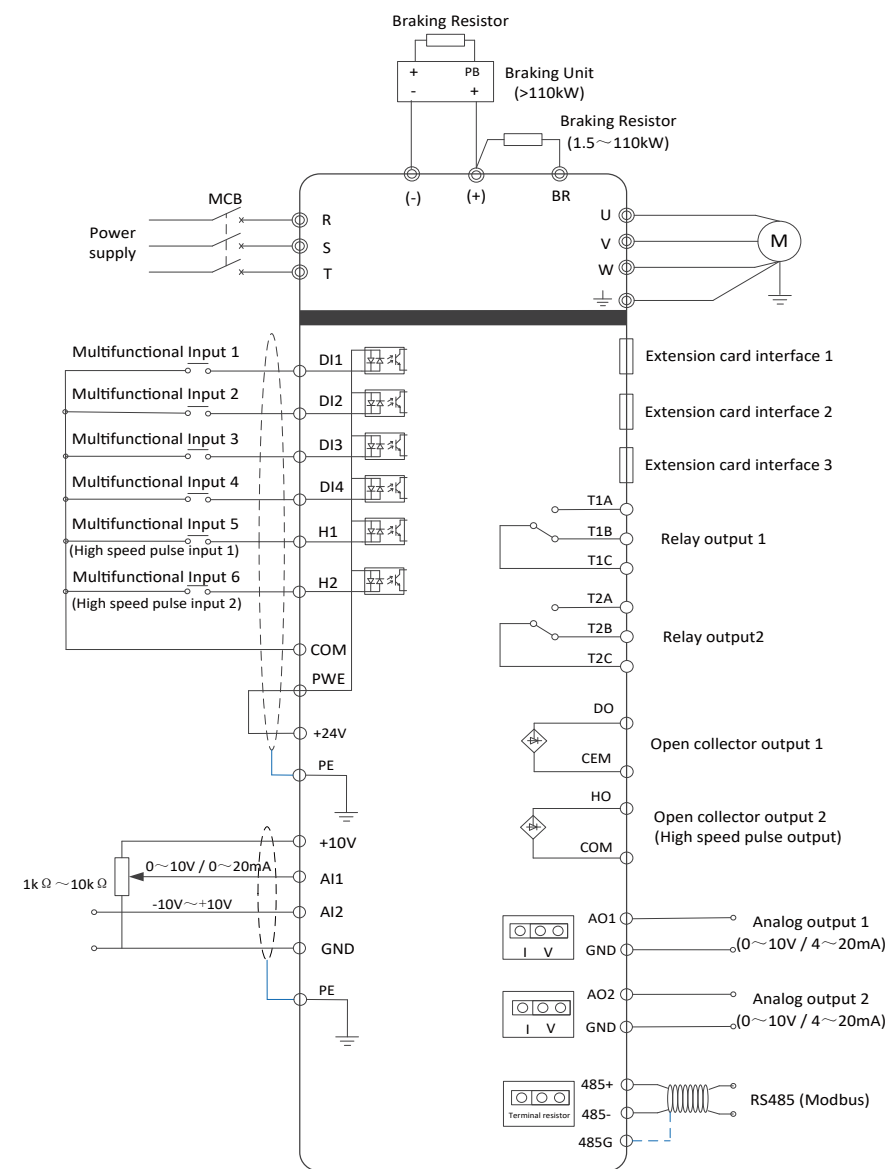


Current waveform of synchronous motor open-loop vector control mode at 300Hz with 100% rated load.

Technical specifications

Item	Technical Index	Specification
Input	Input voltage	AC 3PH 380V (-15%) ~440V (+10%) Rated voltage: 380V AC 3PH 520V (-15%) ~690V (+10%) Rated voltage: 690V
	Input frequency	47–63Hz
Output	Output voltage	0~Input voltage
	Output current	Refer to "Product ratings"
	Output power	Refer to "Product ratings"
	Output frequency	0–400Hz
Technical control performance	Control mode	Space voltage vector control, sensorless vector control (SVC), and vector control with sensor feedback (FVC)
	Motor type	Asynchronous motor (AM) Permanent magnetic synchronous motor (SM)
	Speed regulation ratio	For AM1: 1:200 (SVC); for SM1, 1:20 (SVC); 1:1000 (FVC)
	Speed control precision	± 0.2% (SVC); ± 0.02% (FVC)
	Speed fluctuation	± 0.3% (SVC)
	Torque response	< 20ms (SVC); < 10ms (FVC)
	Torque control precision	10% (SVC); 5% (FVC)
	Starting torque	For AMs: 0.25Hz/150% (SVC) For SMs: 2.5Hz/150% (SVC) 0Hz/200% (FVC)
	Overload capacity	150% for 1 min (every 5 mins); 180% for 10s; 200% for 1s
Running control performance	Frequency setting method	Settings can be implemented through digital, analog, pulse frequency, multi-step speed running, simple PLC, PID communication, communication and so on. Settings can be combined and the setting channels can be switched.
	Automatic voltage regulation	The output voltage can be kept constant although the grid voltage changes.
	Fault protection	More than 30 protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload
	Speed tracking restart	Used to implement impact-free smooth startup for rotating motors

Item	Technical Index	Specification
Peripheral interface	Terminal analog input resolution	No more than 20mV
	Terminal digital input resolution	No more than 20mV
	Analog input	2 channels: AI1: 0(2)–10V/0(4)–20mA; AI2: -10–10V
	Analog output	2 channels; AO1: 0(2)–10V/0(4)–20mA
	Digital input	Accept 12–30V voltage input 4 channels regular input; max. frequency: 1kHz; internal impedance: 3.3kΩ 2 channels high-speed input; max. frequency: 50kHz; supporting quadrature encoder input; with speed measurement function
	Digital output	1 high-speed pulse output; max. frequency: 50kHz 1 DO terminal open collector output
	Relay output	2 programmable relay outputs T1A: NO; T1B: NC; T1C: common T2A: NO; T2B: NC; T2C: common Contact capacity: 3A/AC250V, 1A/DC30V
	Extended interfaces	3 extended interfaces: SLOT1, SLOT2, and SLOT3 (control board of above 7.5kW) Supporting PG cards, communication cards, I/O cards and so on
Other	Mounting method	Wall mounting, floor mounting, and flange mounting
	Temperature of running environment	-10 ~ +50°C;
	Mounting method	Degree 2
	Vibration	The max. amplitude of vibration should not exceed 5.9m/s2 (0.6g)
	Cooling method	Forced air cooling
	EMC filter	The transmission of the VFD meets the IEC/EN 61800-3 C3 requirements. When optional filters are connected externally, the transmission of the VFD can meet the IEC/EN 61800-3 C2 requirements. Note: Comply with the EMC requirements and the technical requirements for the motors and motor cables in the appendix in the manual.



◆ Product Model Description

FD300 – 22G/30P – 4 – B – L1

①	Series code	FD300: FD300 series high-performance multifunction VFD
②	Rated power	22G: Constant torque load 22kW 30P: Variable torque load 30kW
③	Voltage class	4: AC 3PH 380V(-15%)–440V(+10%)
④	DBU configuration	B: Built-in DBU 37kW and below models standard built-in DBU. 45kW~110kW models are optional built-in DBU.
⑤	Filter configuration	L1: Built-in DC reactor L2: Built-in output reactor L12: Built-in DC reactor and output reactor (200kW and above) Note: 355kW~450kW models are standard built-in DC reactors

◆ System wiring



Selection Guide

Product model and its main rated electrical parameters (380V)

model	output power(kW)		Input current(A)		Output current(A)		standard	Screw
	G model	P model	G model	P model	G model	P model		
FD300-1R5G/2R2P-4-B	1.5	2.2	5.0	5.8	3.7	5	Standard brake unit	
FD300-2R2G/004P-4-B	2.2	4	5.8	13.5	5	9.5		
FD300-004G/5R5P-4-B	4	5.5	13.5	19.5	9.5	14		
FD300-5R5G/7R5P-4-B	5.5	7.5	19.5	25	14	18.5		
FD300-7R5G/011P-4-B	7.5	11	25	32	18.5	25		
FD300-011G/015P-4-B	11	15	32	40	25	32		
FD300-015G/018P-4-B	15	18.5	40	47	32	38		
FD300-018G/022P-4-BL1	18.5	22	47	51	38	45	Standard brake unit & DC reactor	
FD300-022G/030P-4-BL1	22	30	51	70	45	60		
FD300-030G/037P-4-BL1	30	37	70	80	60	75		
FD300-037G/045P-4-BL1	37	45	80	98	75	92		
FD300-045G/055P-4-L1	45	55	98	128	92	115	Standard DC reactor	Optional brake unit
FD300-055G/075P-4-L1	55	75	128	139	115	150		
FD300-075G/090P-4-L1	75	90	139	168	150	180		
FD300-090G/110P-4-L1	90	110	168	201	180	215		
FD300-110G/132P-4-L1	110	132	201	265	215	260		
FD300-132G/160P-4-L1	132	160	265	310	260	305	Standard DC reactor	
FD300-160G/185P-4-L1	160	185	310	345	305	340		
FD300-185G/200P-4-L1	185	200	345	385	340	380		
FD300-200G/220P-4-L1	200	220	385	430	380	425	Standard DC reactor	Optional output reactor
FD300-220G/250P-4-L1	220	250	430	460	425	480		
FD300-250G/280P-4-L1	250	280	460	500	480	530		
FD300-280G/315P-4-L1	280	315	500	580	530	600		
FD300-315G/355P-4-L1	315	355	580	625	600	650		
FD300-355G/400P-4-L1	355	400	625	715	650	720	Standard DC reactor	Optional output reactor
FD300-400G/450P-4-L1	400	450	715	840	720	820		
FD300-450G/500P-4-L1	450	500	840	890	820	860		
FD300-500G/560P-4-L02	500	560	890	997	860	1020	Standard input & output power Antibody	
FD300-560G/630P-4-L02	560	630	997	1121	1020	1100		
FD300-630G-4-L02	630	710	1121	/	1100	/		

Product model and its main rated electrical parameters (690V)

model	Output power (kW)	Input current (A)	Output current (A)	Carrier frequency (kHz)
FD300-022G-6	22	35	27	1~15
FD300-030G-6	30	40	35	1~15
FD300-037G-6	37	47	45	1~15
FD300-045G-6	45	52	52	1~15
FD300-055G-6	55	65	62	1~15
FD300-075G-6	75	85	86	1~15
FD300-090G-6	90	95	98	1~15
FD300-110G-6	110	118	120	1~15
FD300-132G-6	132	145	150	1~15
FD300-160G-6	160	165	175	1~15
FD300-185G-6	185	190	200	1~15
FD300-200G-6	200	210	220	1~15
FD300-220G-6	220	230	240	1~15
FD300-250G-6	250	255	270	1~15
FD300-280G-6	280	286	300	1~15
FD300-315G-6	315	334	350	1~15
FD300-355G-6	355	360	380	1~15
FD300-400G-6	400	411	430	1~15
FD300-450G-6	450	461	480	1~15
FD300-500G-6	500	518	540	1~15
FD300-560G-6	560	578	600	1~15
FD300-630G-6	630	655	680	1~15
FD300-710G-6	710	750	750	1~15
FD300-800G-6	800	860	860	1~15
FD30				

