

FOPOWERS

FG310

High Performance Vector Variable
Frequency Drives



FOPOWERS

Company Profile



Fugong Power, with its profound accumulation in the fields of industrial control technology and liquid cooling technology, has become a major supplier in the fields of industrial control and liquid cooling, as well as in the drive control of new energy vehicles, possessing a complete product development, manufacturing, sales, and service platform company.

Manufacturing

The production workshop covers an area of approximately 30000 m², with advanced automated production equipments and comprehensive testing equipments, with an annual production capacity of 100,000 units.

R&D

With more than 1,600 m² of R&D space, up to now, we have obtained 161 certified patents, including 2 overseas invention patents. It not only confirms our innovation ability and international vision, but also serves as a solid foundation for our technological advancement and product reliability.

The company's AC drives and peripheral products are widely used in photovoltaic, plastics, packaging and printing, food processing machinery, chemical and other industries, covering a power range of 0.4kW to 1000kW, and rich extended features to make the products better adapt to a variety of industrial scenarios. With excellent performance and comprehensive functions, the products have been certified by authoritative testing organizations and have become the mainstream of domestic industrial control field.



Powerful performance

- High-performance vector control, high precision speed output.
- Low speed high torque, improve equipment low speed control performance.
- Super strong overvoltage and overcurrent suppression capability.

Diversified functions

- Software and hardware modular design powerful expansion ability.
- Support host computer operation, reduce debugging time and difficulty.
- High performance, easy to use keypads with a wide variety of keypad types.

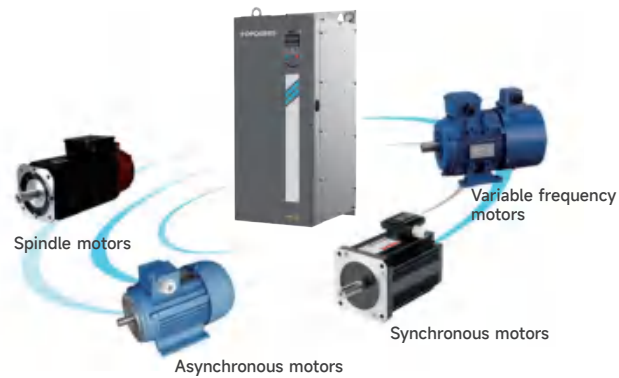
Compact structure

- Full range of book-style narrow body design, high power density.
- Support embedded, wall mounted, cabinet installation.
- Direct heat dissipation from top to bottom, multiple drives can be installed side by side device, greatly reducing the volume of the electrical cabinet.

Stable and reliable

- Independent air duct design, adapt to the harsh external environment.
- Advanced heat dissipation design to effectively ensure product thermal reliability.
- Strict component selection and testing procedures, and rigorous whole-machine testing to ensure product quality.

Product characteristics

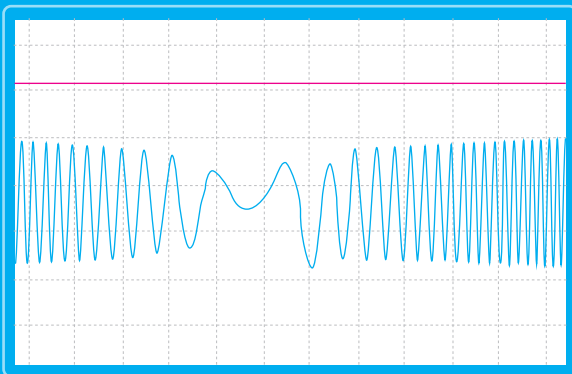


FG310 series drives can drive various motors such as ordinary asynchronous motors, variable frequency motors, synchronous motors, high speed motors and spindle motors, and are suitable for various loads such as constant torque, constant power, fans and pumps.

Characteristic index	FG310
Speed range	1 : 1000
Steady speed accuracy	$\pm 0.02\%$
Control Accuracy Response Time	< 10ms
Torque control accuracy	< 5%
Starting frequency / higher starting torque	0Hz / 200%

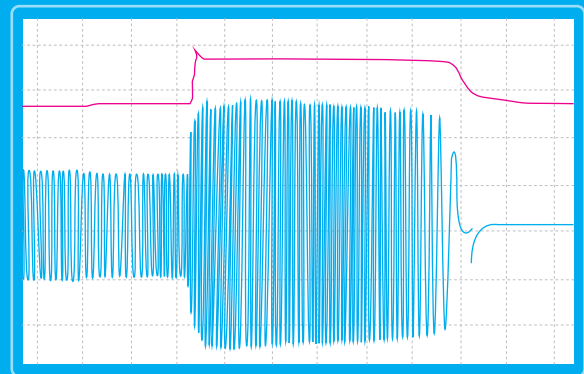
Speed, torque, position control integration

Torque and speed control performance—Ensure smooth operation of the machine, quick response and small torque ripple.



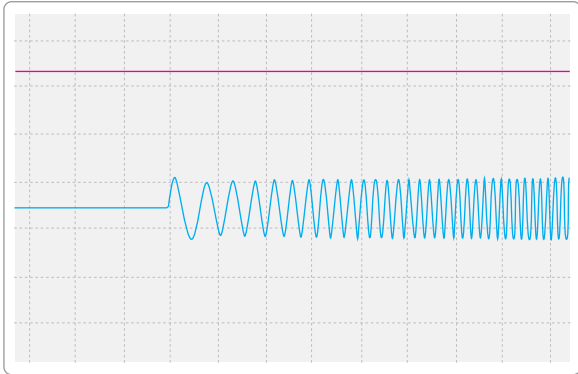
Excellent dynamic response

Excellent torque and speed dynamic response, Sensorless vector control torque response time (time from 0 step to rated torque) is less than 20ms; Feedback vector control torque response time is less than 10ms; the dynamic response accuracy of the speed loop is 0.5%.



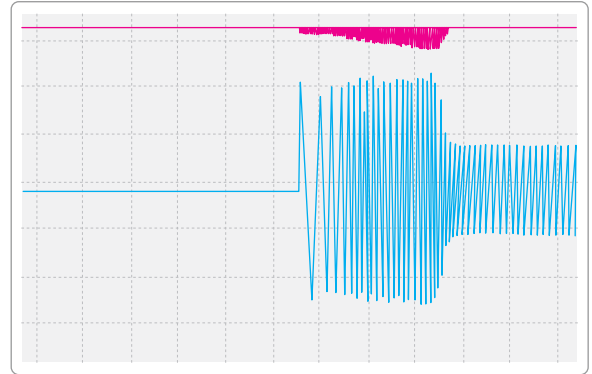
Overexcitation braking function

In the case of partial inertia shutdown, the braking resistor can be used without increasing the braking resistance, and the over-excitation braking function can be used to realize fast braking and improve product ease of use.



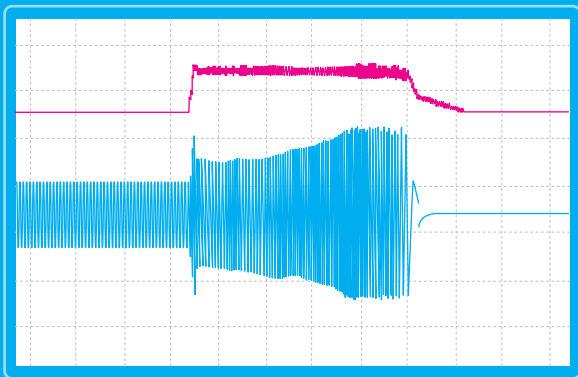
High starting torque

Low frequency high torque output. In feedback vector control mode, it can output 200% of rated torque at zero speed; in sensorless vector control mode, it can output 150% of rated torque stably at 0.25Hz.



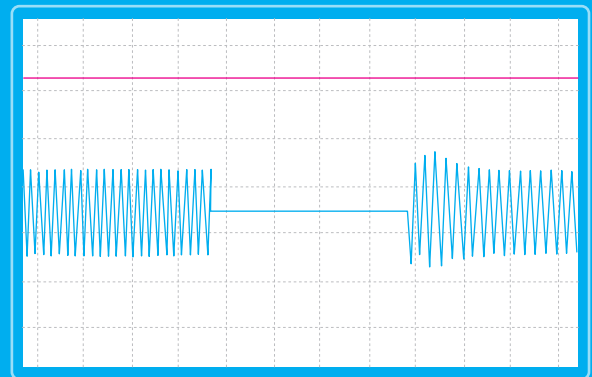
Super strong overcurrent suppression ability

The overcurrent suppression function can avoid the overcurrent fault caused by sudden load or interference in frequency converter. Reduce the loss caused by unexplained shutdown.



Super strong overvoltage suppression capability

The overvoltage suppression function can avoid the overvoltage fault caused by the bus voltage rise of the variable frequency drives.



Excellent speed tracking performance

In a very short time to achieve speed tracking start with identification direction, greatly reduce the impact of shutdown and restart.

Structure and hardware features

Control panel, digital tube display by default

Expansion card interface

EMC terminal



Terminal resistance, input and output switching adopt DIP selection

Control terminal

Main terminal

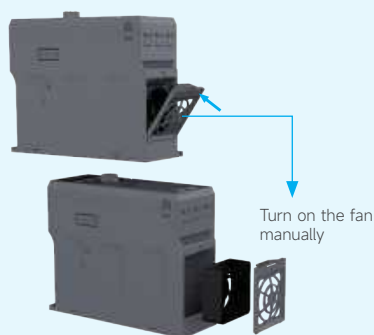


Simple internal layout, convenient wiring operation

The whole series adopts narrow-body design and strictly controls the structural size. Various expansion interfaces and wiring terminals are distributed in an orderly manner, and the wiring operation is convenient.

Completely independent air duct structure

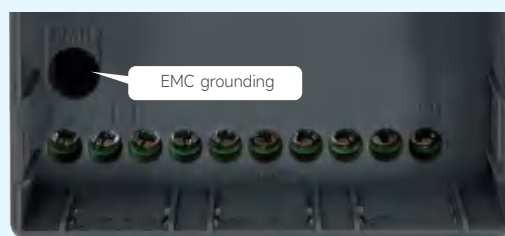
Electronic device and radiator duct isolation design, in which capacitance, MOS and relay to strengthen protection, machine a closed design is adopted on both sides of the device. Improve the tolerance of the machine in harsh environment.



Remove the fan cover for cleaning and replacement

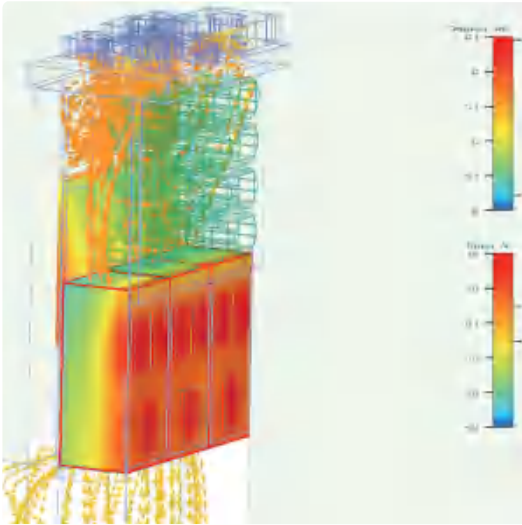
Fast disassembly and assembly design of the fan

FG310 adopts innovative fan structure design. On the premise of ensuring the stability and efficiency of the fan, it can be replaced and cleaned quickly without the help of external tools.



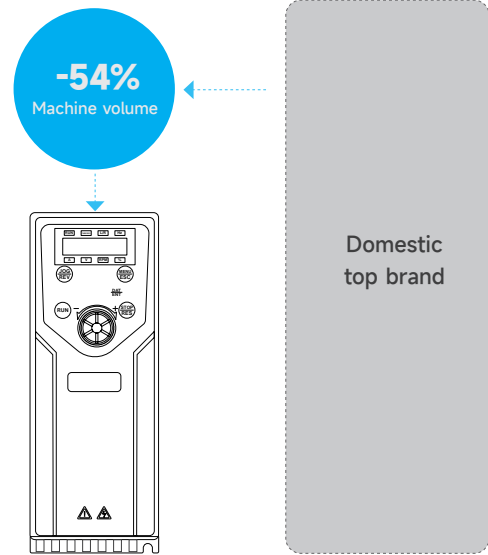
EMC grounding design

Adopt innovative EMC grounding design, grounding can be quickly selected through the terminal or intermittently. effectively solve EMC interference.



Advanced heat dissipation design

Wide tooth surface heat dissipation and high wind speed design. Ensure the full power range drives can be used without derating of at high temperature.



New book structure

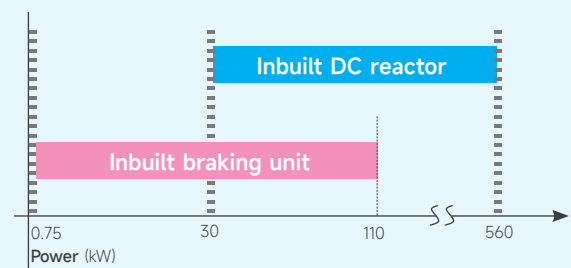
The whole series adopts the book-style design, the volume is about 54% smaller than the similar book-style products, and the space utilization rate is high, which effectively saves the customer's electrical cabinet space and electrical cabinet cost.



	Name	Status	Meaning
Unit indicator	Hz	ON	Frequency unit
	A	ON	Current unit
	V	ON	Voltage unit
	RPM	ON	Speed unit
	%	ON	Percentage unit
Status indicator	RUN	ON / OFF	Drive run / Stop
	FWD/REV	ON / OFF	Reverse / Forward
	L/R	ON / OFF Flashing	Terminal / Local / Communication control

Keypad operation

A newly designed panel keypad with superior operability. Built-in keypad and external keypad support dual-line display (control right can be selected through the drive parameters built-in or external keypad).



Braking unit and reactor configuration (380V)

- 0.75-22kW standard inbuilt braking unit
- 30-110kW optional inbuilt braking unit
- 30-110kW optional inbuilt DC reactor
- 132-560kW standard inbuilt DC reactor

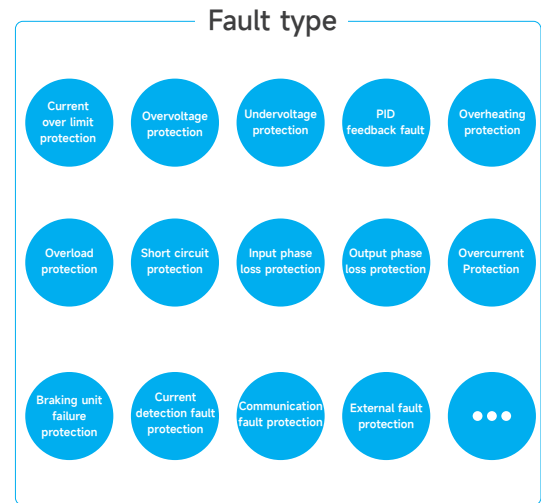
Standard user terminal function

The following table shows the standard user terminal function list. For other customized functions, please contact us!

Unit circuit	Quantity	Remark
Ordinary digital input	5	Bidirectional input, 1 high-speed pulse input standard
Ordinary digital output	1	High-speed pulse output optional
Relay output	1	Normally open/ Normally closed
10V power output	1	20mA
24V power output	1	200mA
Analog input	2	V/A supports random switching
Analog output	1	V/A supports random switching
RS485 communication	1	Modbus-RTU

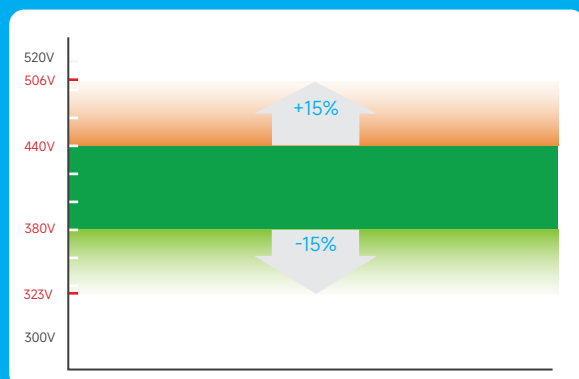
Protective function

It has output short circuit to ground protection, internal buffer relay protection, fan drive circuit protection, external 24VDC short circuit protection, motor overload protection and other hardware protection which can comprehensively protect the internal and peripheral equipment of the drive.



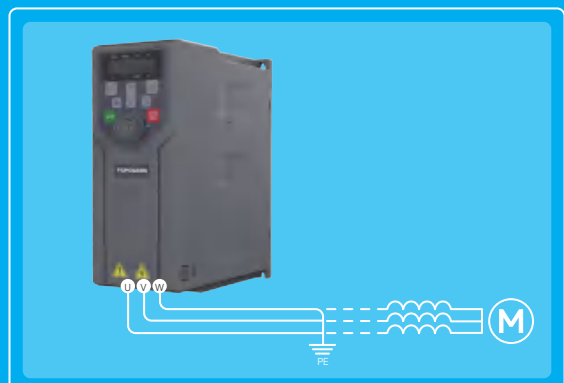
Wide voltage design

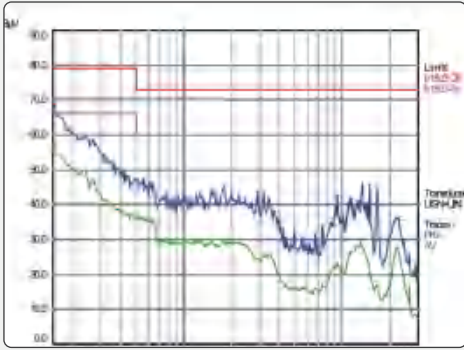
The allowable fluctuation range of input voltage is $\pm 15\%$ of rated voltage, it can be protected from voltage fluctuation when using and can meet demanding when in poor city grid.



New motor-to-ground short circuit detection

The drive will monitor the motor at the start. Once there is a short circuit to the ground, the drive will give an alarm.





Optimized EMC performance

Centralized and other high depth book-type filter unit, save installation space, in line with EC 61800-3; Centralized management, the cost is better.

Expandability

Super expansion capability

The AC drive supports a variety of expansion card types and has rich functions. Different function expansion cards can be selected according to customers' requirements, and the configuration is flexible to meet various customization requirements.

CANopen



EtherCAT



Expansion card type	Remark
IO expansion card	AI, AO, DI, DO, relay, PT100, PT1000 motor temperature detection, etc.
PG card	ABZ, ABZUVW, Resolver, SIN, COS and other types of coding optional
PROFIBUS-DP card	Optional
CANopen card	Optional
PROFINET card	Optional
EtherCAT card	Optional
WIFI communication card	Optional
Bluetooth communication card	Optional
....	To be developed

Naming Rules

FG310 - 4T - 55 G B / 75 P B - L

① ② ③ ④ ⑤ ③ ④ ⑤ ⑥

① Drive series
AC drive

③ Adaptable Power
G-type 55kW motor
P-type 75kW motor

⑤ Built-in Braking Unit
Blank: No
B: Yes

② Voltage Class
2S: Single-phase 220 V
2T: Three-phase 220 V
4T: Three-phase 380V

④ Adaptable Type
G: General Type
P: Blower and Pump Type

⑥ Contains reactor
L: Contains DC reactor
I: Contains AC input reactor
O: Contains AC output reactor
H: Contains AC input and output reactor

AC Drive rated output current

Voltage	220V	380V
Power	Output current [A]	Output current [A]
0.75	4.0	2.5
1.5	7.0	3.8
2.2	9.6	5.1
4.0	16	9.0
5.5	20	13
7.5	30	17
11	42	25
15	55	32
18.5	70	37
22	/	45
30	/	60
37	/	75
45	/	91
55	/	112
75	/	150
90	/	176

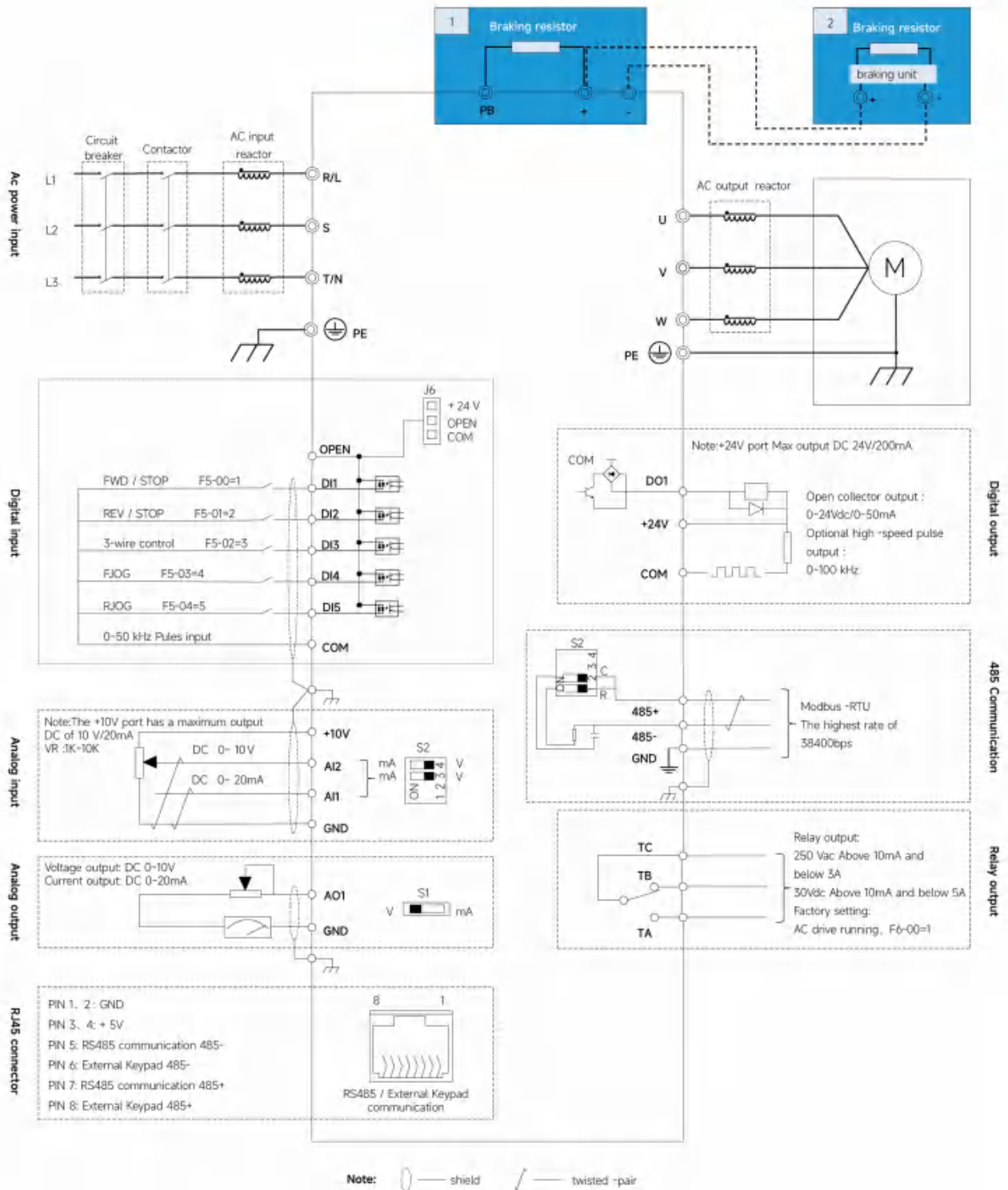
Voltage	380V	
Power	Input current [A]	Output current [A]
110	214	210
132	240	253
160	287	304
185	306	326
200	365	377
220	410	426
250	441	465
280	495	520
315	565	585
355	617	650
400	687	725
450	790	820
500	835	860
560	920	950
630	1050	1100
710	1198	1260

Standard wiring diagram

Select the braking mode according to the model:

Mode 1: 110kW (inclusive) and below power segment models directly connect external braking resistors;

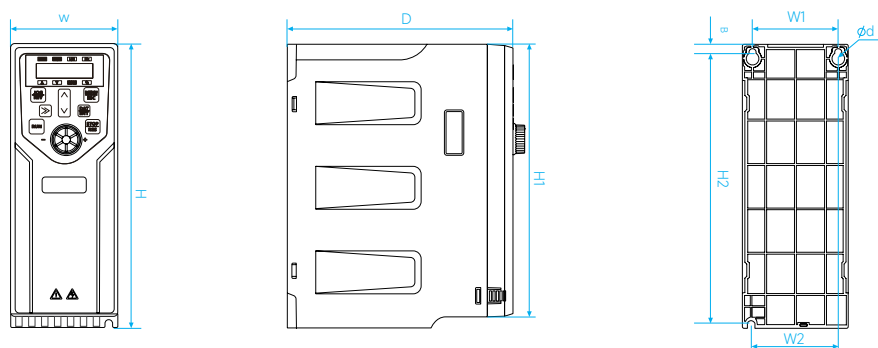
Mode 2: 132kW (inclusive) and above power range models need to be connected to the braking resistor through an external braking unit.



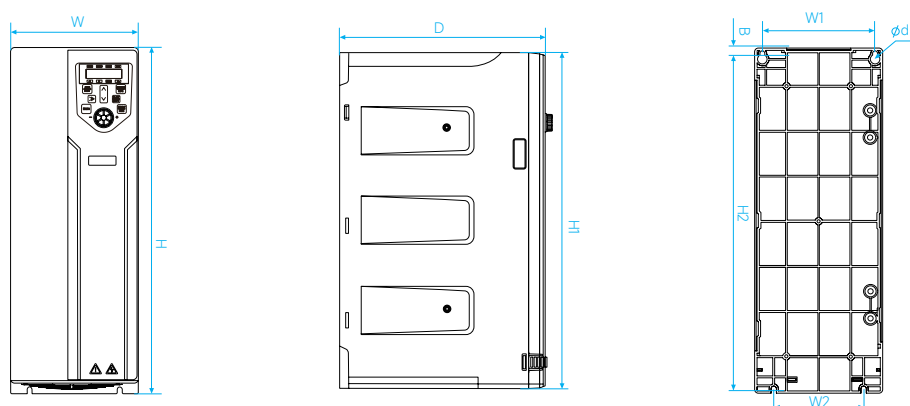
Installation dimension drawing

Note: 110kW and below support wall-mounted and embedded installation (optional).

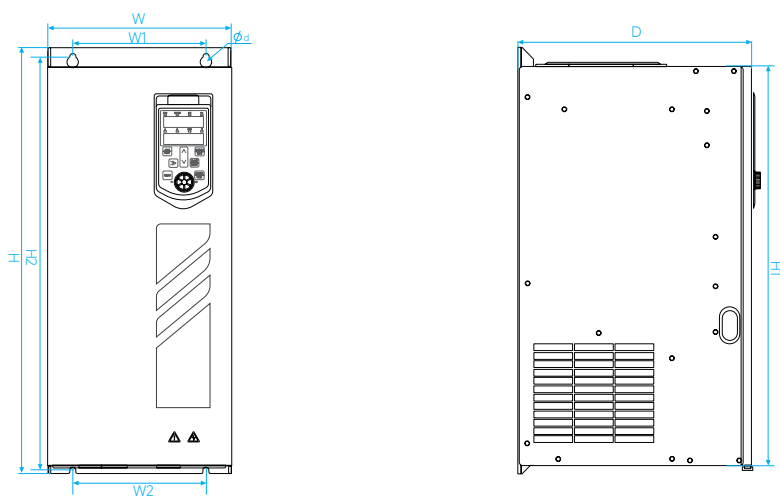
185kW and above support wall-mounted and cabinet installation (optional).



Schematic diagram of P1



Schematic diagram of P2



Schematic diagram of P3

Model	External and installation dimensions [mm]									NW [Kg]	GW [Kg]	Outline Specification DiaGram
	W	H	H1	D	W1	W2	H2	B	d			
FG310-4T-250G/280P-L	369	1141	1050	550	200	200	1110	20	4- ϕ 18	130	150	P3
FG310-4T-280G/315P-L												
FG310-4T-315G/355P-L	400	1250	1160	550	240	240	1213	24	4- ϕ 18	209	225	
FG310-4T-355G/400P-L												
FG310-4T-400G/450P-L												
FG310-4T-450G/500P-L	460	1400	1294	544	300	300	1360	24	4- ϕ 18	230	255	
FG310-4T-500G/560P-L												
FG310-4T-560G/630P-L												
FG310-4T-630G/710P-I	850	1800	1700	700	785	/	/	/	4- ϕ 16	475	500	P4
FG310-4T-710G/800P-I												

Accessories list

Expansion card selection table



PD310IO1

1 analog input (AI3)
PT100 / PT1000 / KTY84 temperature detection
1 analog output (AO2)
4 digital inputs (DI6-DI9)
1 digital output (DO2)
2 relay outputs (T2, T3)
Note: Cannot be used at the same time as the communication card



PD310PG2

Encoder power supply 5V or 8V
Sine Cosine Encoder
Sine-cosine with absolute encoder



PD310PG1-TTL

Incremental Encoder (5V)
1:1 split frequency output
(open collector)



PD310PG1-HTL

Incremental Encoder (24V)
1:1 split frequency output
(open collector)



PD310PG3

Rotary transformer (ratio 0.5)



PD310PN1

Profinet communication

Expansion card selection table



PD310DP1

Profibus-DP communication



PD310EN1

MODBUS TCP communication



PD350EC1

EtherCAT communication



PD350CAN1

CANopen communication

Keypad selection table



LCD keypad



Dual-line keypad



Single line keypad



Braking unit selection table

Model	Recommended power for brake resistance [kW]	Recommended brake resistance [Ω]	Brake unit
FG310-2S-0.75GB	0.08	≥ 150	Inbuilt
FG310-2S-1.5GB	0.1	≥ 100	
FG310-2S-2.2GB	0.1	≥ 70	
FG310-2S-4.0GB	0.2	≥ 40	
FG310-2S-5.5GB	0.3	≥ 26	
FG310-2S-7.5GB	0.5	≥ 16	
FG310-2S-11GB	0.8	≥ 11	
FG310-2S-15G	1.0	≥ 10	Inbuilt optional
FG310-2S-18.5G	1.4	≥ 8.0	
FG310-2T-0.75GB	0.08	≥ 150	Inbuilt
FG310-2T-1.5GB	0.1	≥ 100	
FG310-2T-2.2GB	0.1	≥ 70	
FG310-2T-4.0GB	0.2	≥ 40	
FG310-2T-5.5GB	0.3	≥ 25	
FG310-2T-7.5GB	0.5	≥ 16	
FG310-2T-11GB	0.8	≥ 11	
FG310-2T-15G	1.0	≥ 10	Inbuilt optional
FG310-2T-18.5G	1.4	≥ 8.0	
FG310-4T-0.75GB/1.5PB	0.15	≥ 150	Inbuilt
FG310-4T-1.5GB/2.2PB	0.15	≥ 150	
FG310-4T-2.2GB/4.0PB	0.3	≥ 100	
FG310-4T-4.0GB/5.5PB	0.3	≥ 76	
FG310-4T-5.5GB/7.5PB	0.4	≥ 76	
FG310-4T-7.5GB/11PB	0.5	≥ 76	
FG310-4T-11GB/15PB	0.8	≥ 40	
FG310-4T-15GB/18.5PB	1.0	≥ 27	
FG310-4T-18.5GB/22PB	4.0	≥ 27	
FG310-4T-22GB/30PB	4.5	≥ 27	
FG310-4T-30G/37P	6.0	≥ 16	Inbuilt optional
FG310-4T-37G/45P	7.4	≥ 16	
FG310-4T-45G/55P	9.0	≥ 14	
FG310-4T-55G/75P	11	≥ 10	
FG310-4T-75G/90P	15	≥ 8.0	
FG310-4T-90G/110P	18	≥ 6.8	
FG310-4T-110G/132P	22	≥ 6.8	
FG310-4T-132G/160P-L	27	≥ 4.5	Brake unit should be externally mounted when needed
FG310-4T-160G/185P-L	32	≥ 3.6	
FG310-4T-185G/200P-L	37	≥ 3.3	
FG310-4T-200G/220P-L	40	≥ 3.3	
FG310-4T-220G/250P-L	44	≥ 2.7	
FG310-4T-250G/280P-L	50	≥ 2.7	
FG310-4T-280G/315P-L	56	≥ 2.2	
FG310-4T-315G/355P-L	63	≥ 1.9	
FG310-4T-355G/400P-L	70	≥ 1.7	
FG310-4T-400G/450P-L	80	≥ 1.6	
FG310-4T-450G/500P-L	90	≥ 1.3	
FG310-4T-500G/560P-L	100	≥ 1.2	
FG310-4T-560G/630P-L	120	≥ 1.2	
FG310-4T-630G/710P-I	/	/	No brake
FG310-4T-710G/800P-I	/	/	

Input and output reactors and filter selection table

Model	AC input reactor model	AC output reactor model	Filter model
Single-phase 220V			
FG310-2S-0.75GB	/	FG-OCL-10-0.7-4T--1%	DL-20TH1
FG310-2S-1.5GB	/	FG-OCL-10-0.7-4T--1%	DL-20TH1
FG310-2S-2.2GB	/	FG-OCL-15-0.47-4T-- 1%	DL-30TH1
FG310-2S-4.0GB	/	FG-OCL-20-0.35-4T-- 1%	DL-40TH1
FG310-2S-5.5GB	/	FG-OCL-30-0.24-4T-- 1%	DL-50TH1
FG310-2S-7.5GB	/	FG-OCL-40-0.18-4T-- 1%	DL-70TH1
FG310-2S-11GB	/	FG-OCL-60-0.12-4T-- 1%	DL-100TH1
FG310-2S-15G	/	FG-OCL-60-0.12-4T-- 1%	/
FG310-2S-18.5G	/	FG-OCL-80-0.09-4T-- 1%	/
Three-phase 220V			
FG310-2T-0.75GB	FG-ACL-10-1.4-4T--2%	FG-OCL-10-0.7-4T--1%	DL-5EBK5
FG310-2T-1.5GB	FG-ACL-10-1.4-4T--2%	FG-OCL-10-0.7-4T--1%	DL- 10EBK5
FG310-2T-2.2GB	FG-ACL-15-0.93-4T--2%	FG-OCL-15-0.47-4T--1%	DL- 16EBK5
FG310-2T-4.0GB	FG-ACL-30-0.47-4T--2%	FG-OCL-20-0.35-4T--1%	DL-25EBK5
FG310-2T-5.5GB	FG-ACL-40-0.35-4T--2%	FG-OCL-30-0.24-4T--1%	DL-35EBK5
FG310-2T-7.5GB	FG-ACL-50-0.28-4T--2%	FG-OCL-40-0.18-4T--1%	DL-50EBK5
FG310-2T-11GB	FG-ACL-60-0.23-4T--2%	FG-OCL-60-0.12-4T-- 1%	DL-65EBK5
FG310-2T-15G	FG-ACL-80-0.17-4T--2%	FG-OCL-60-0.12-4T-- 1%	DL-65EBK5
FG310-2T-18.5G	FG-ACL-90-0.16-4T--2%	FG-OCL-80-0.09-4T-- 1%	DL- 100EBK5
Three-phase 380V			
FG310-4T-0.75GB/1 .5PB	FG-ACL-10-1.4-4T--2%	FG-OCL-10-0.7-4T--1%	DL-5EBK5
FG310-4T-1.5GB/2.2PB	FG-ACL-10-1.4-4T--2%	FG-OCL-10-0.7-4T--1%	DL-5EBK5
FG310-4T-2.2GB/4.0PB	FG-ACL-10-1.4-4T--2%	FG-OCL-10-0.7-4T--1%	DL- 10EBK5
FG310-4T-4.0GB/5.5PB	FG-ACL-15-0.93-4T--2%	FG-OCL-10-0.7-4T--1%	DL- 16EBK5
FG310-4T-5.5GB/7.5PB	FG-ACL-20-0.7-4T--2%	FG-OCL-15-0.47-4T--1%	DL-25EBK5
FG310-4T-7.5GB/11PB	FG-ACL-30-0.47-4T--2%	FG-OCL-20-0.35-4T--1%	DL-25EBK5
FG310-4T-11GB/15PB	FG-ACL-40-0.35-4T--2%	FG-OCL-30-0.24-4T--1%	DL-35EBK5
FG310-4T-15GB/18.5PB	FG-ACL-60-0.23-4T--2%	FG-OCL-50-0.14-4T--1%	DL-50EBK5
FG310-4T-18.5GB/22PB	FG-ACL-80-0.17-4T--2%	FG-OCL-60-0.12-4T--1%	DL-65EBK5
FG310-4T-22GB/30PB	FG-ACL-80-0.17-4T--2%	FG-OCL-80-0.09-4T--1%	DL-80EBK5
FG310-4T-30G/37P	FG-ACL-90-0.16-4T--2%	FG-OCL-90-0.08-4T--1%	DL- 100EBK5
FG310-4T-37G/45P	FG-ACL-120-0.12-4T--2%	FG-OCL-120-0.06-4T--1%	DL- 130EBK5

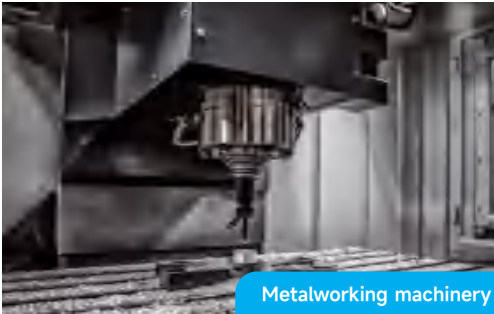
Model	AC input reactor model	AC output reactor model	Filter model
FG310-4T-45G/55P	FG-ACL-150-0.093-4T--2%	FG-OCL-150-0.047-4T--1%	DL- 130EBK5
FG310-4T-55G/75P	FG-ACL-200-0.07-4T--2%	FG-OCL-200-0.035-4T--1%	DL-200EBK5
FG310-4T-75G/90P	FG-ACL-220-0.064-4T--2%	FG-OCL-220-0.032-4T--1%	DL-200EBK5
FG310-4T-90G/110P	FG-ACL-250-0.056-4T--2%	FG-OCL-250-0.028-4T--1%	DL-250EBK5
FG310-4T-110G/132P	FG-ACL-300-0.047-4T--2%	FG-OCL-300-0.024-4T--1%	DL-300EBK3
FG310-4T-132G/160P-L	FG-ACL-330-0.042-4T--2%	FG-OCL-330-0.021-4T--1%	DL-400EBK3
FG310-4T-160G/185P-L	FG-ACL-400-0.035-4T--2%	FG-OCL-400-0.018-4T--1%	DL-400EBK3
FG310-4T-185G/200P-L	FG-ACL-470-0.03-4T--2%	FG-OCL-470-0.015-4T--1%	DL-400EBK3
FG310-4T-200G/220P-L	FG-ACL-470-0.03-4T--2%	FG-OCL-470-0.015-4T--1%	DL-600EBK3
FG310-4T-220G/250P-L	FG-ACL-470-0.03-4T--2%	FG-OCL-470-0.015-4T--1%	DL-600EBK3
FG310-4T-250G/280P-L	FG-ACL-590-0.024-4T--2%	FG-OCL-590-0.012-4T--1%	DL-600EBK3
FG310-4T-280G/315P-L	FG-ACL-590-0.024-4T--2%	FG-OCL-590-0.012-4T--1%	DL-600EBK3
FG310-4T-315G/355P-L	FG-ACL-870-0.016-4T--2%	FG-OCL-900-0.0077-4T-- 1%	DL-700EBK3
FG310-4T-355G/400P-L	FG-ACL-870-0.016-4T--2%	FG-OCL-900-0.0077-4T-- 1%	DL-700EBK3
FG310-4T-400G/450P-L	FG-ACL-870-0.016-4T--2%	FG-OCL-900-0.0077-4T-- 1%	DL-800EBK3
FG310-4T-450G/500P-L	FG-ACL- 1200-0.012-4T--2%	FG-OCL-1200-0.0063-4T-- 1%	DL- 1000EBK5
FG310-4T-500G/560P-L	FG-ACL- 1200-0.012-4T--2%	FG-OCL-1200-0.0063-4T-- 1%	DL- 1000EBK5
FG310-4T-560G/630P-L	FG-ACL- 1200-0.012-4T--2%	FG-OCL-1200-0.0063-4T-- 1%	DL- 1600EBK5
FG310-4T-630G/710P-I	FG-ACL- 1350-0.010-4T--2%	FG-OCL-1380-0.001-4T-- 1%	DL- 1600EBK5
FG310-4T-710G/800P-I	FG-ACL- 1350-0.010-4T--2%	FG-OCL-1380-0.001-4T-- 1%	DL- 1600EBK5

Technical specifications

Items		Specifications
Power input	Rated input voltage	200V Voltage Class: Single/Three-phase 200V ~ 240V
		400V Voltage Class: Three-phase 380V ~ 440V
	Frequency	50Hz/60Hz, tolerance $\pm 5\%$
	Voltage range	-15% ~ +15%
		Voltage out-of-balance rate<3%, distortion rate as per the requirements of IEC61800-2
Power output	Output voltage [V]	3-phase: 0 ~ rated input voltage, error < $\pm 3\%$
	Output frequency [Hz]	0.00 ~ 599.00Hz; unit: 0.01Hz
	Overload capacity	G type: 150% ~ 60 seconds, P type: 120% ~ 60 seconds

Items		Specifications
Control characteristics	Control mode	V/f control Sensorless vector control (SVC) Feedback vector control (FVC)
	Range of speed regulation	1: 200 (Sensor-less vector control) 1: 1000 (Feedback vector control)
	Speed accuracy	±0.5% (Sensor-less vector control) ±0.02% (Feedback vector control)
	Torque control accuracy	5% (SVC) , 3% (FVC)
	Torque increase	Automatic torque lifting; Manual torque increased by 0.1-30.0%
	Starting torque	0.25Hz: 150% (Sensor-less vector control) 0Hz: 200% (Feedback vector control)
Basic functions	ACC / DEC time	0.0 ~ 650.00s
	Switching frequency	1.0kHz ~ 16kHz
	Frequency setting	Digital setting + control panel , Communication , Analog setting , Terminal pulse setting
	Motor start-up methods	Started from starting frequency , DC brake start-up , Speed tracking start
	Motor stop methods	Ramp to stop , Free stop
Featured functions	Parameter copy, parameter backup, common DC bus, free switchover between two motors' parameters, various master & auxiliary setting and switchover, flying start, a variety of Accel/Decel curves optional, brake control, 15-step speed control programmable (2-step speed supports flexible frequency command), wobble frequency control, count function, three history faults, over excitation brake, over voltage stall protection, under voltage stall protection, restart on power loss, skip frequency, frequency binding, four kinds of Accel/Decel time, motor thermal protection, flexible fan control, process PID control, simple PLC, multi-functional key programmable, droop control, autotuning, field-weakening control, high-precision torque restraint, V/f separated control	
Environment	Place of operation	Indoors, no direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, water drop or salt, etc.
	Altitude	0~2000m. De-rate 1% for every 100m when the altitude is above 1000 meters
	Ambient temperature	-10°C ~ 50°C , The rated output current should be derated 1% for every 1°C when the ambient is 40°C ~ 50°C
	Relative humidity	0~95%, no condensation
	Vibration	Less than 5.9m/s ² (0.6g)
	Storage temperature	-20°C ~ +60°C
Others	Efficiency at rated Amps	Rated power 7.5kW and below: ≥ 93% , 11~45kW: ≥ 95% , 55kW and above: ≥ 98%
	IP grade	IP20
	Cooling method	Forced air cooling

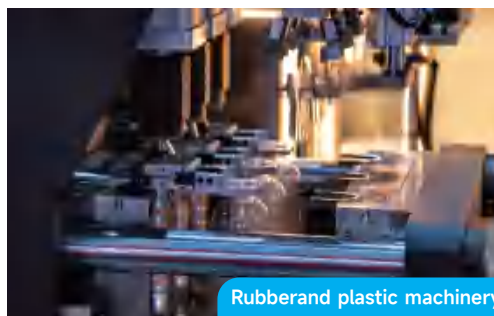
Application scenarios



Metalworking machinery



Food and Packaging



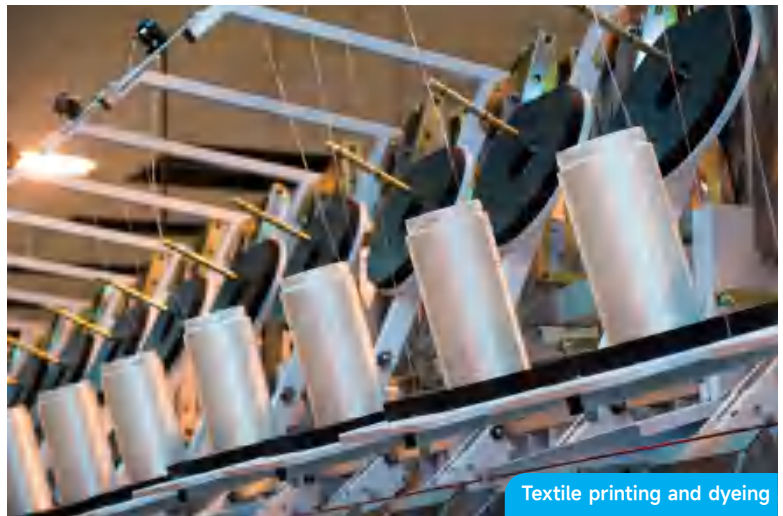
Rubber and plastic machinery



Woodworking machinery



HVAC & Water Supply



Textile printing and dyeing



Metallurgical equipment



Industrial fan



Photovoltaic water pump

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