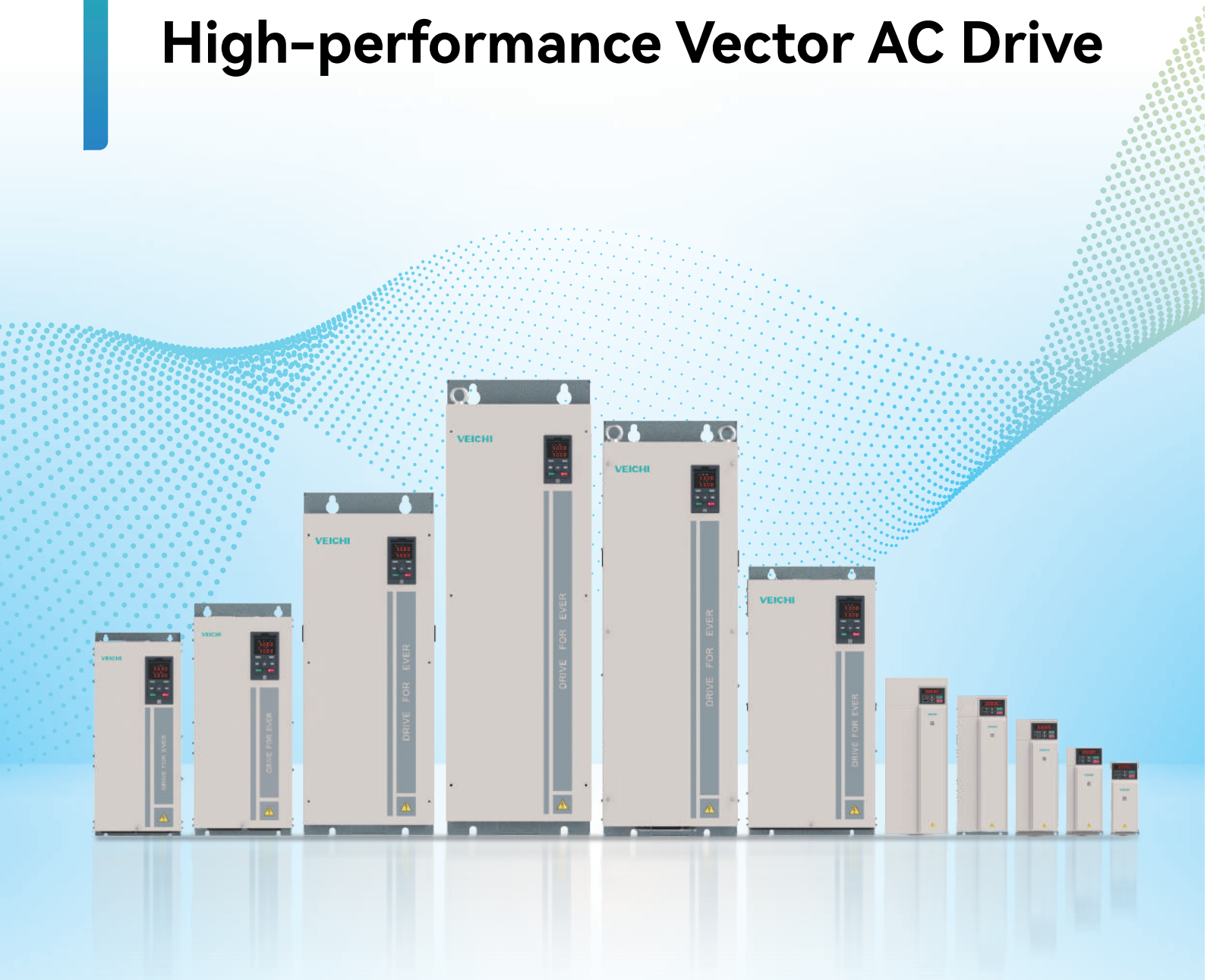
VEICHI

AC310 Series
High-performance Vector AC Drive



About Us



Veichi Electric (Stock Code: 688698) specializes in electrical transmission and industrial control, operating as an integrated high-tech enterprise in R&D, production, and sales of industrial automation products. With a vision to lead in smart industry and green energy solutions, the company leverages its R&D and manufacturing hubs in Suzhou, additional R&D centers in Shenzhen and Xi'an, and wholly-owned subsidiaries overseas, consistently serving customers worldwide with competitive and reliable solutions.

Under the "One Core, Two New Drivers" strategy, Veichi focuses on industrial automation, offering AC drives, servo systems, and control systems widely applied across heavy and light industries, as well as high-end equipment sectors, supporting the digital and intelligent transformation of manufacturing with its tailored solutions. Simultaneously, in two emerging fields, it provides one-stop solutions for humanoid, collaborative, and mobile robots in embodied intelligence, while in green energy, it delves into segments like photovoltaic, energy storage, and hydrogen energy, to "connect every device with green power," fostering a synergistic growth between core operations and new ventures.

Sustained R&D has yielded a portfolio of proprietary patented technologies including silicon carbide application, HF injection, motor controls and protections (auto-tuning, flying-start, high-speed flux-weakening, V/F control, vector control), high-density water-cooling layout, and IGBT drive protection. As of September 30, 2025, Veichi holds 234 patents, with 66 for invention.

Over two decades of steady growth, Veichi has earned numerous certifications and accolades from national and regulatory authorities, including "High-Tech Enterprise," "Postdoctoral Research Workstation," and provincial honors like "Engineering Technology Research Center," "Enterprise Technology Center," and "Industrial Internet Development Demonstration Enterprise (Benchmark Factory Category)."

Guided by its mission to "Drive Smart Industry, Co-create a Green Future," Veichi will continue to intensify R&D and advance into high-performance, high-reliability fields to propel global progress.

2005

- Start of business in Shenzhen
- First generation of AC drive launched

2016

- Suzhou VEICHI Phase I put into operation
- First-generation motion control system successfully launched

2019

- Restructured into a joint-stock company
- VEICHI overseas subsidiary established, marking the start of global expansion

2020

- Listed on the Science and Technology Innovation Board (STAR Market)
- Recognized as a provincial SRDI "Little Giant" enterprise

2021

- VEICHI-controlled subsidiary established, enhancing industrial chain integration
- Recognized as a SRDI "Little Giant" enterprise

2022

- Xi'an R&D Center established
- VEICHI Digital Energy subsidiary founded, digitalizing the green energy
  Integrated power solutions for humanoid/ collaborative/mobile robots launched, initiating deployment in the robotics sector

2023

- Suzhou VEICHI Phase II put into operation
- VEICHI Medical Equipment subsidiary established, expanding into the healthcare sector

2024

- Strategic acquisition of Changzhou Jiteng, entering the port and marine sector
- “One Core, Two New Drivers” development strategy adopted

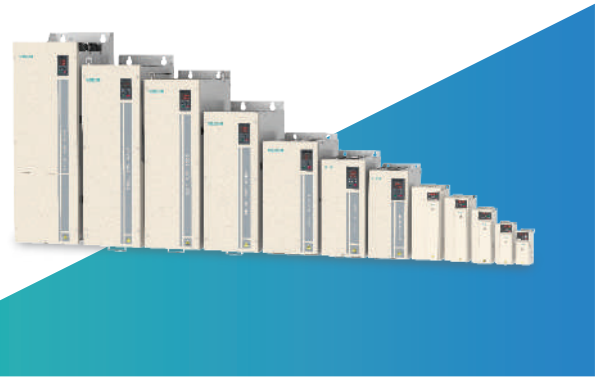
2025

- Suzhou VEICHI Phase III digital production base put into operation
- Changzhou high-end electrical equipment production base topped out
- Jiujiang smart production base groundbreaking ceremony held

AC310 series high-performance AC drive

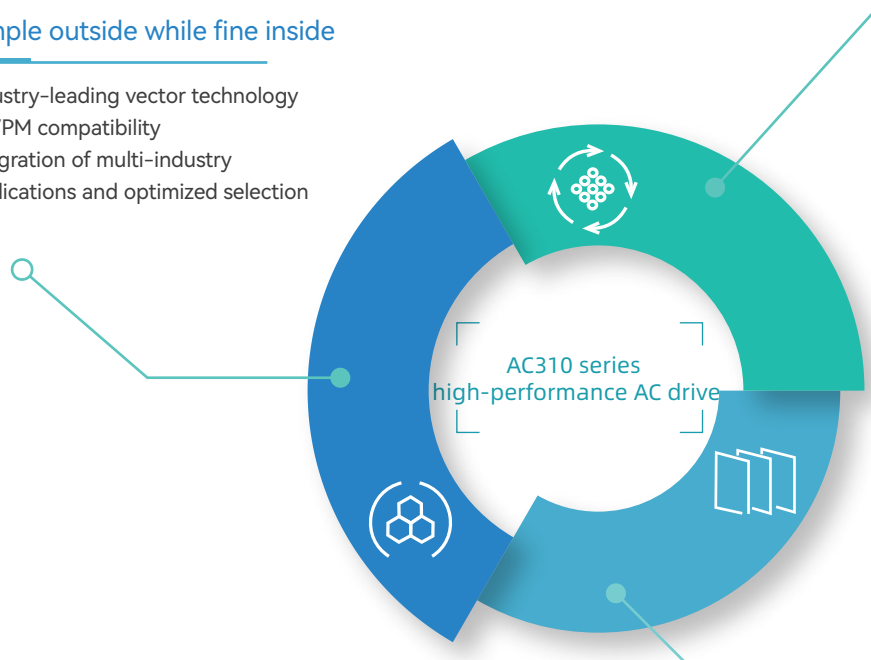
Building on the proven AC300-series platform, the AC310-series drives elevate performance with next-generation enhancements. Featuring advanced magnetic field-oriented vector control technology, they deliver precise control for both asynchronous and synchronous motors, supporting multiple control modes including voltage-frequency split.

The optimized component layout retains the compact, book-style design while improving thermal performance and usability. With multiple extension ports and accessories, these drives offer exceptional power density, reliability, and application flexibility - simplifying selection and integration for diverse industrial needs.



Simple outside while fine inside

Industry-leading vector technology
AM/PM compatibility
Integration of multi-industry applications and optimized selection



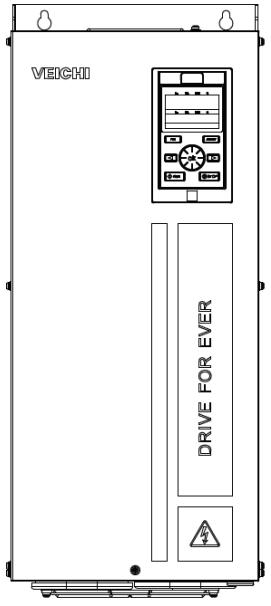
Reduced operations

Simple wiring & European-style terminals to reduce wiring time and cost
Simple use by common parameter layout and optimize keys on the keypad
Simple debugging via special upper software to minimize time and difficulty

A “book” among drives

Book-like design with narrow housing, volume reduced by up to 60% .
Up and down straight-through heat dissipation enabling side-by-side installation of several drives and thus reducing the volume of the electrical cabinet.

Product Features



Features overview

01	High-performance vector universal platform,new motor control algorithm	07	Innovative grounding method for AC310 series to quickly solve electromagnetic interference
02	Synchronous and asynchronous motor control integrated, open loop and closed loop supported	08	Modular design of software and hardware for powerful extension capability
03	Precise torque excitation decoupling, excellent dynamic response performance	09	Overall three-profings for the product and tri-proof paint on PCBA for stable and reliable operation
04	Booklet design for full series to minimize installation space	10	Comprehensive expansion ports and accessories for all sorts of applications
05	Safe and reliable new air duct design of DC fan cooling for full series	11	Optimized external keypad design
06	Comprehensive thermal simulation for rational hardware layout	12	Simpler on-site debugging methods for field firmware upgrade

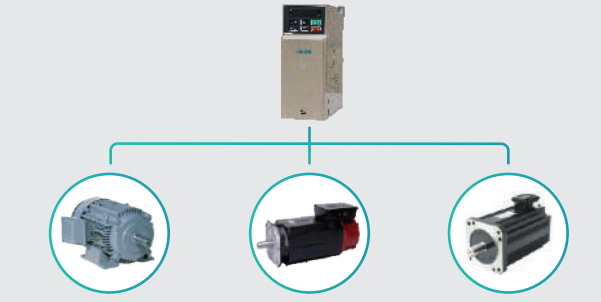
General specification

Power level	Single phase 220V 50/60Hz	0.75kW-15kW
	Three phase 220V 50/60Hz	0.75kW-220kW
	Three phase 380V 50/60Hz	0.75kW-1120kW
	Three phase 660V 50/60Hz	22kW-1120kW
Input	Allowable voltage fluctuation	T/S2: -10%~10%; T3: -15%~10%; T6: -10%~10%; Voltage imbalance rate<3%
	Allowable frequency fluctuation	Frequency: ±5%
	Distortion rate	IEC61800-2
Output	Output voltage	0~Input voltage,deviation lower than 5%
	Output frequency range	0-599Hz
	Overload capacity	T/S2: 150% rated current for 24s, 180% rated current for 3.4s
		T3: 150% rated current for 89s, 180% rated current for 10s, 200% rated current for 3s
		T6: 150% rated current for 89s, 180% rated current for 10s, 200% rated current for 3s

Performance features

Multiple types of motors/loads

The AC310 series drives deliver unmatched versatility, supporting a comprehensive range of motor types including:standard three-phase asynchronous motors, variable frequency motors, AC servo motors, permanent magnet synchronous motors, high-speed synchronous motors, spindle motors, torque motors, and liner motors. This extensive compatibility ensures optimal performance across diverse applications, providing customers with a single, flexible solution for all their motor control requirements.



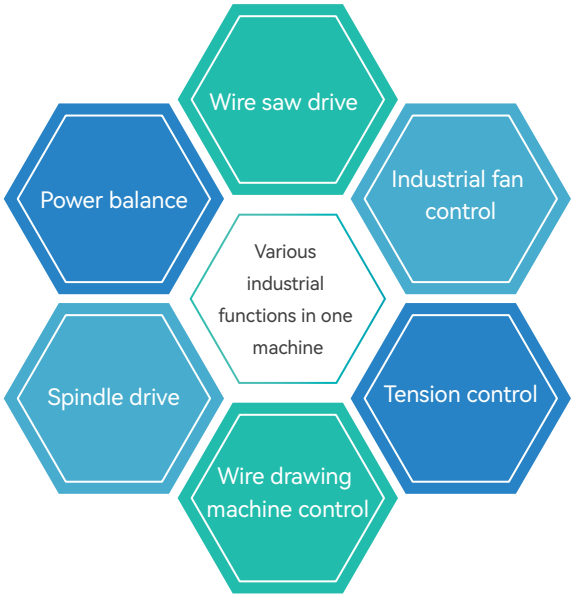
Control mode

Control mode	Speed control	Torque control	Position control	Applicable motor
VF mode	●			Asynchronous motor
Voltage frequency split	●			Torque motor, EPS power supply,series resonance
SVC	●	●		Asynchronous, permanent magnet synchronous
FVC	●	●	●	Asynchronous, permanent magnet synchronous, synchronous reluctance

Excellent control performance

Control mode	Speed control range	Starting torque	Applicable motor
SVC	1:200	150%	Permanent magnet synchronous motor
SVC	1:100	150%	Asynchronous motor
FVC	1:1000	200%	Asynchronous, permanent magnet synchronous motor

Abundant industrial applications



Voltage frequency split

The AC310 series delivers exceptional torque motor control with stable EPS power supply regulation, ensuring precise steady-state performance. Specifically engineered for demanding power applications, it serves as the ideal solution for high-voltage insulation test equipment.



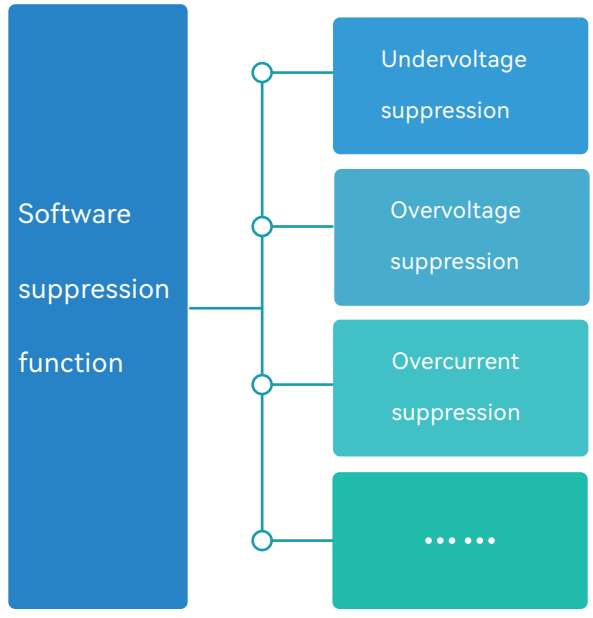
Active response to industry 4.0

As intelligent production systems evolve toward centralized control architectures, the AC310 series delivers universal connectivity to streamline system integration. The drives feature:

- Native interoperability with major DCS and PLC systems
- Direct HMI communication across multiple protocols
- Standard MODBUS-RTU interface
- Optional fieldbus modules (PROFIBUS-DP/CANOPEN/PROFINET)



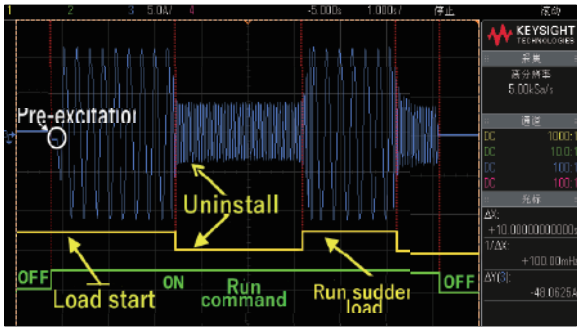
Software suppression function



High starting torque characteristics

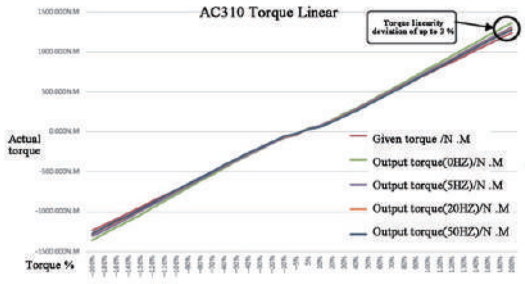
● 200% torque at 0Hz – Industry-leading low-frequency performance for demanding applications

● 0.01Hz stable operation – Ensures smooth starts and precise control under full load conditions



● Precision torque control – Maintains ±3% linearity for ultra-stable operation

● Consistent output performance – Ensures equipment reliability in demanding applications



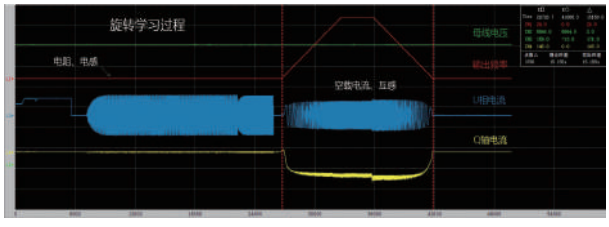
Motor parameter auto-tuning

● Smart auto-tuning – Accurate parameter identification whether running or stationary

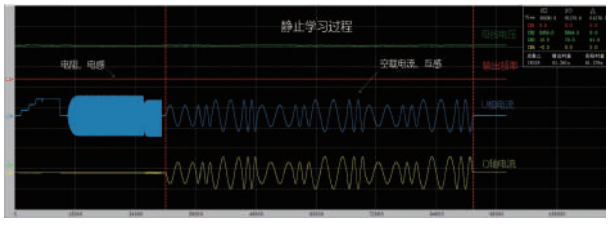
● Simplified commissioning – Maintains peak control accuracy and dynamic response with minimal setup

Dynamic auto-tuning Load disconnected during tuning
For occasions with high control accuracy requirements

Static auto-tuning Tuning performed when motor is still



Rotary self-tuning



Static self-tuning

Overexcitation braking function

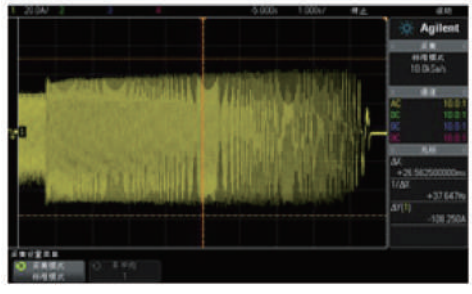
The AC drive's innovative overexcitation braking function delivers rapid deceleration without requiring external braking resistors. This intelligent system:

● Achieves instant stopping during partial inertia conditions

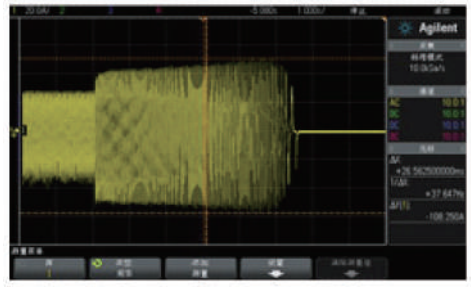
● Eliminates bus voltage spikes during deceleration

● Prevents overvoltage faults through active voltage control

● Enables power-loss emergency stopping for safety compliance



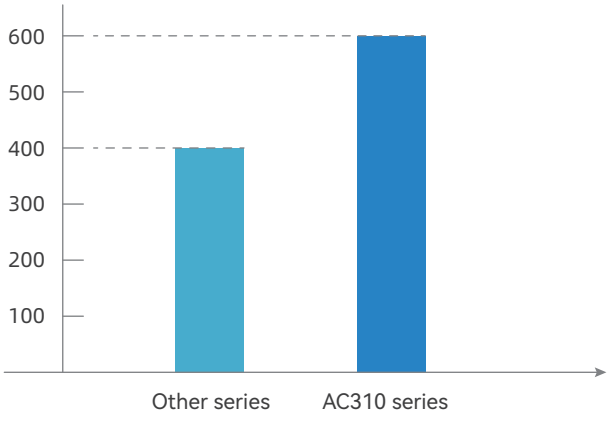
Overexcitation braking function is invalid



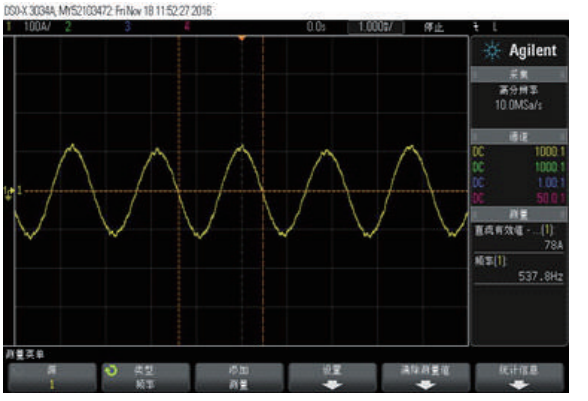
Overexcitation braking function is effective

Stable high-speed weak magnetic control

New weak magnetic control algorithm plus high bandwidth current vector control algorithm ensures stable high-speed weak magnetic running and highly precise weak magnetic output twelve-fold at most.



- Other series: The maximum output frequency under vector control is 320/400Hz;
- AC 310 series: The maximum output frequency under vector control is 600Hz.

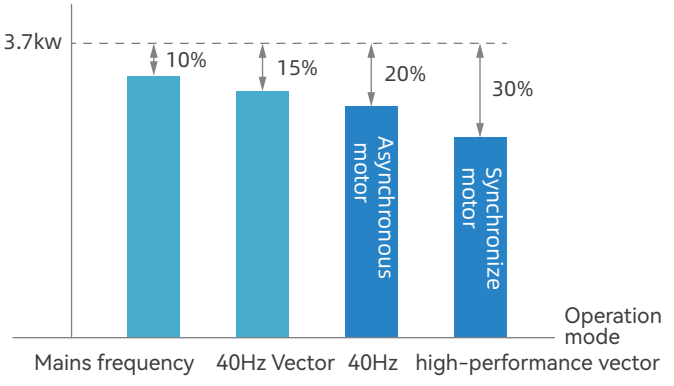


current waveform under 12-fold weak magnetic field

High energy saving

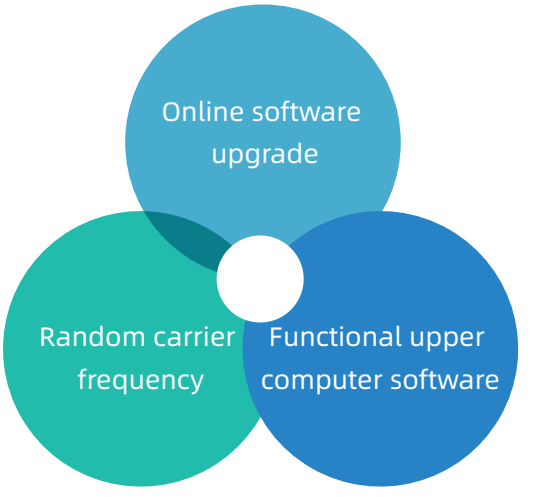
Our advanced energy-saving algorithm dynamically optimizes motor performance by:

- Intelligently adjusting excitation current based on real-time load demands
- Reducing energy losses by up to 30% compared to standard drives
- Maintaining optimal efficiency across all operating conditions



Fan energy saving comparison chart

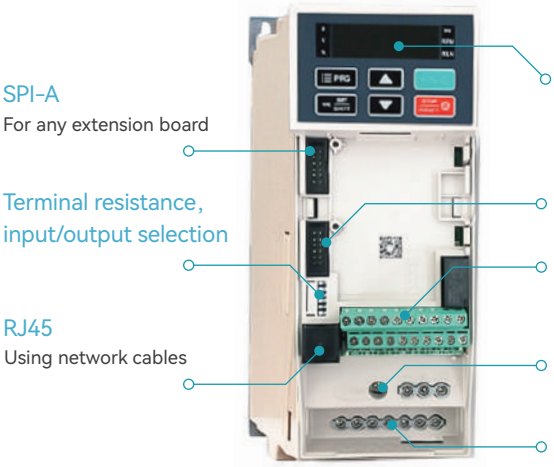
Other software functions



Structural Hardware Characteristics

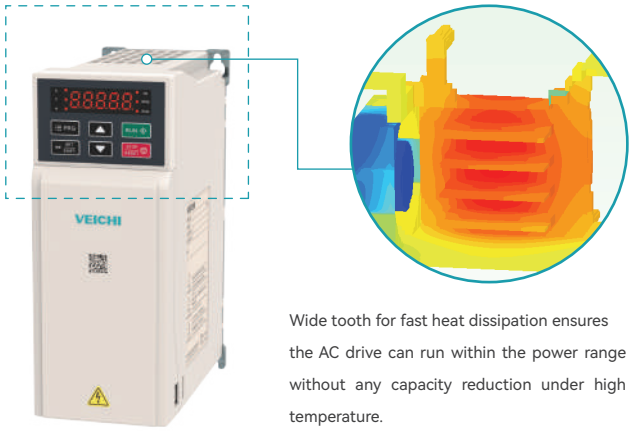
Concise internal layout and convenient wiring

- Slim-profile housing - Packed with full-featured connectivity
- User-friendly layout - Organized terminals for straightforward wiring



New structure design

Electronic devices are separated from the radiator air duct while capacitors, MOS tubes, relays are designed with stronger protection and both sides of the machine are sealed to raise environmental resistance.



Wide tooth for fast heat dissipation ensures the AC drive can run within the power range without any capacity reduction under high temperature.

Number of standard terminals

No.	Unit circuit	Quantity	Remarks
1	X terminal	5	Bidirectional input
2	Y terminal	1	Open collector output
3	Relay output	1	Normally open/ normally closed
4	10V power output	1	50mA
	24V power output	1	100mA
5	Voltage/current analog input	2	V/A support free switching
6	Analog output (optional)	1	0-10V
			0-20mA
			0-100kHz pulse output
7	RS485	1	ModBus-RTU
8	Low speed pulse input	1	X5 0-5kHz pulse input

New book-like housing

Dubbed the "book-sized drive" for 60% space savings with its innovative narrow-body design.

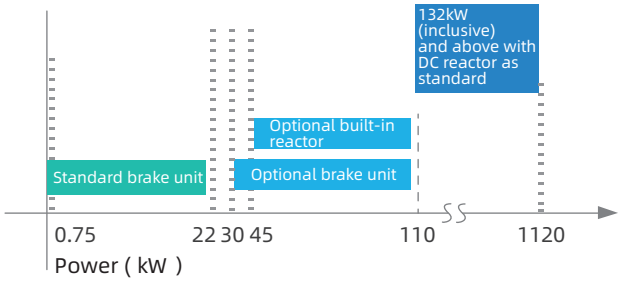


Optimized structure design

Reduced cabinet space, installation footprint and costs.



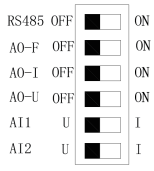
Braking unit and reactor configuration



- 0.75~22kW with standard brake unit
- 30~110kW with optional built-in brake unit
- 45kW~110kW with optional built-in DC reactor
- 132kW (inclusive) and above with standard DC reactor

Port characteristics selection via DIP switch

Customers can quickly select the input and output port characteristics via the DIP switch with a screwdriver.

Dialing diagram	Tag	Select location	Function description
	RS485	485 terminal resistance	RS485 to120Ω terminal resistance
	AO-F	AO frequency	0.0~100kHz frequency output
	AO-I	AO current	AO interface 0~20mA current output or 4~20mA current output
	AO-U	AO voltage	0~10V voltage output
	AI1	AI1 current/voltage	0~20mA or 4~20mA or AI1 input 0~10V
	AI2	AI2 current/voltage	0~20mA or 4~20mA or AI2 input 0~10V

Keypad operation

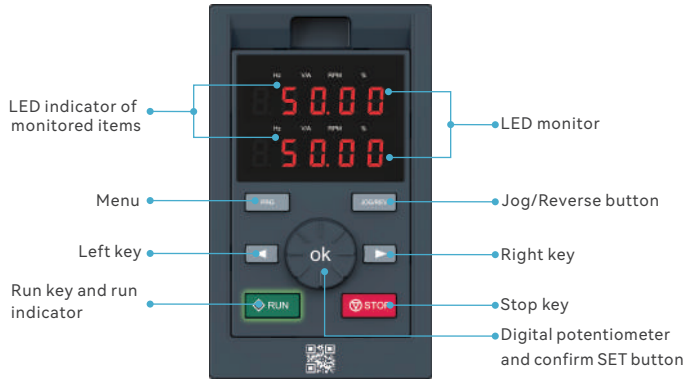
The newly engineered high-sensitivity keypad delivers exceptional tactile response and operational precision. Featuring dual-display capability, the system supports simultaneous use of built-in and external keypads – switching via parameter selection.



Integrated keypad

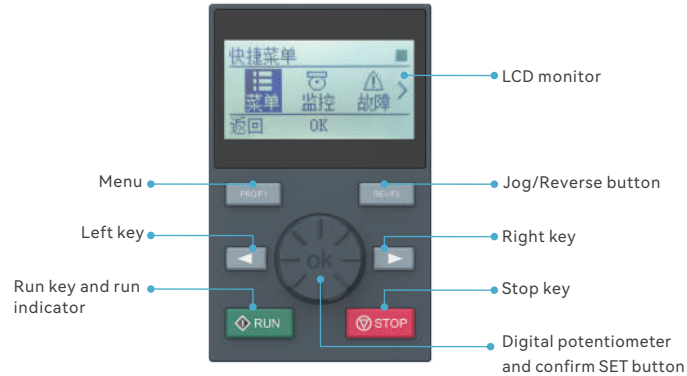


Single-line display external keypad
(opening size: 61*36mm))



Dual- line display external keypad
(opening size: 119*70mm)

Note: Single-line keypad for plastic models 37kw and below, dual-line keypad for iron models 37kw and above.



LCD keypad
(opening size: 119*70mm)

Name		Status	Meaning
Unit indicator	Hz	Flashing/on	Frequency unit
	A	on	Current unit
	V	Flashing/on	Voltage unit
	RPM	on	Speed unit
	%	Flashing/on	Percentage unit
Status Indicator	RUN	on	Forward running
	RUN	Flashing	Reverse running
	RUN	off	Stop

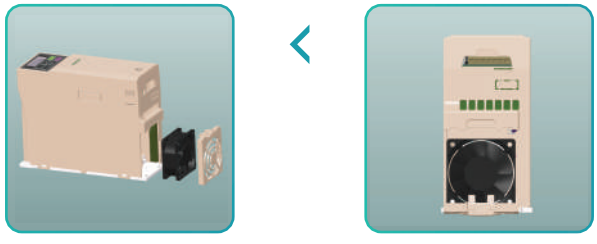
Fast disassembly and assembly design of the fan

The innovative design of the fan structure on AC310-series ensures the stability and efficiency of the fan and it can be quickly replaced and cleaned without any external tools.



Open the fan manually

Open the fan easily

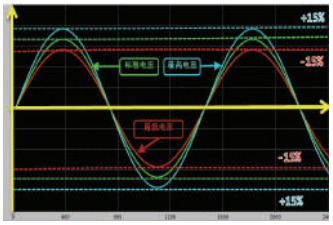


Remove the fan for replacement

Remove the fan cover for cleaning

Wide voltage design

±15% voltage tolerance and protection systems for stable performance in unstable grids.



EMC function

Fast grounding via terminals for effective interference suppression.



EMC grounding

European-style terminals

Safe & Reliable

European-style terminals comply with IEC 60998-2-1, UL 1059, and UL 486E standards, ensuring secure electrical connections.

Quick Wiring

Simple 3-step installation: strip → label → tighten. Fast and hassle-free.

Time-Saving

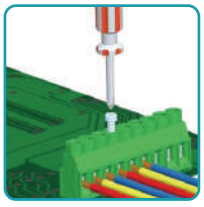
When used in low-power AC310 drive main circuits, they cut wiring time by 50% versus standard terminals, boosting assembly efficiency.

Stripping →setting wire number→ crimping cable lugs- screw locking

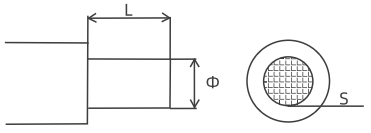


Old-fashioned terminal block

Stripping → Setting wire No. →Screw locking



European terminal

	AC310 model	Wire diameter (mm)	Wire cross-sectional area S (mm²)	Stripping length L (mm)
Main circuit terminal	0.75kW-2.2kW	0.25-2.5	0.05-5.2	7-8
	4.0kW-5kW	0.5-2.5	0.2-5.2	6-7
	7.5kW-11kW	0.8-4	0.5-13	10-11
Wire stripping diagram				

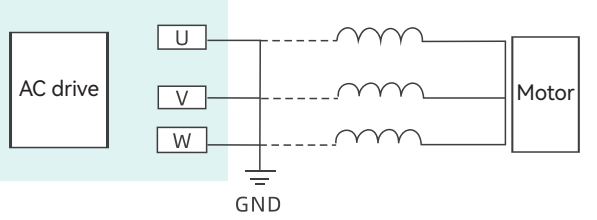
Protection function

The AC drive ensures full protection for internal and peripheral equipment through multiple safeguards, including:

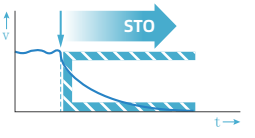
System abnormality	Input phase loss	Stall protection	Accelerating overcurrent	Output phase lost
Load protection 1	Accelerating overvoltage	Fault type	Overheat	PID feedback malfunction
Running undervoltage	Current detection fault	Excessive speed deviation	Motor overload	Motor detection failure

New motor grounding short-circuit detection

- Real-time ground fault monitoring - Active protection from power-on with instant fault response
- Automatic startup prevention - Immediately blocks operation upon short-circuit detection



STO



Certain advanced models feature the optional STO function.

Expandability

Superb expansion capability

Smart expansion made simple - Dual SPI interfaces with auto-detection for plug-and-play customization
Future-ready design - Expandable architecture adapts to your evolving application needs.

Function Extension

Model	Note
IO	Optional, high-speed pulse, relay
RT	optional, default software tracking
PG	Optional, multi-type encoder
RT	Optional
Simple logic board	Optional
GPRS	Optional

IO Extension

Attribute	Terminal	Description
Input IO	X6/X7/X8/X10	PLC/COM
High-speed pulse input	X10	0-100KHz
Digital output	Y2	DC24V/50mA
Relay output	TA2/TB2/TC2	3A/240VAC
Temperature detection	PK+/PK-	Support PT100/PT1000/KTY84, Motor temperature detection
Common port	COM/PLC2	External common port
Switch	S7	External common port

Logic board extension

- PLC-Free Control Solution - AC drive integrates basic PLC functionality.
- Familiar Programming Environment-Mitsubishi MELSEC-compatible development interface with preloaded function blocks .



Veichi IOT

Precision & Easy Deployment
High-accuracy intelligent modules with tool-free installation.

Dual-Mode Connectivity
Reliable GPRS/GSM communication for uninterrupted operation.

Smart Remote Services
Real-time monitoring and remote diagnostics for predictive maintenance.



Communication extension

Model	Note
Modbus-RTU	Optional
PROFIBUS-DP	Optional
CANopen	Optional
PROFINET	Optional
.....	

Model Description

AC310-T3-037 G/45 P-B (L)

Series name
AC310

Voltage level

Codename	Definition	Codename	Definition
S	Single phase	2	220V
T	Three phase	3	380V
		6	660V

Integrated accessories
B: Built-in braking unit
L: Built-in DC reactor
BL: Built-in braking unit and DC reactor
LD: Cabinet units with built-in DC reactors

Drive type
G: Heavy load
P: Light load

Power level
2R2: 2. 2kW
004: 4kW
.....

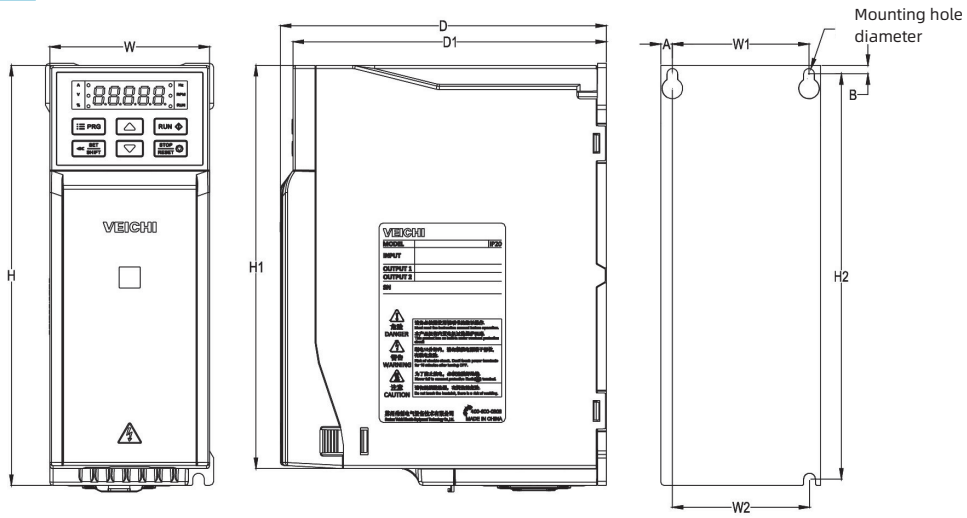
Rated output current

Voltage	220V	380V	660V
Power level(kW)	Rated output current (A)		
0.75	4	3	
1.5	7	4	
2.2	10	6	
4	16	10	
5.5	20	13	
7.5	30	17	
11	42	25	
15	55	32	
18.5	70	38	
22	80	45	28
30	110	60	35
37	130	75	45
45	160	90	52
55	200	110	63
75	260	150	86
90	320	180	98
110	380	210	121
132	420	250	150

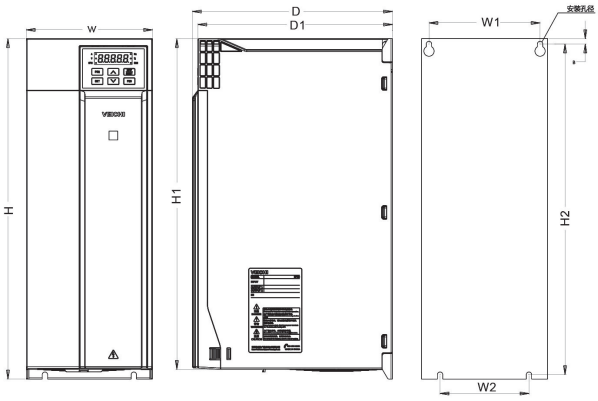
Voltage	220V	380V	660V
Power level(kW)	Rated output current (A)		
160	550	310	175
185	600	340	198
200	660	380	218
220	720	415	235
250		470	270
280		510	330
315		600	345
355		670	380
400		750	430
450		810	466
500		860	540
560		990	600
630		1200	690
710		1340	760
800		1500	860
900		1600	932
1000		1720	1080
1120		1980	1200

Installation Dimension Diagram

Plastic case model

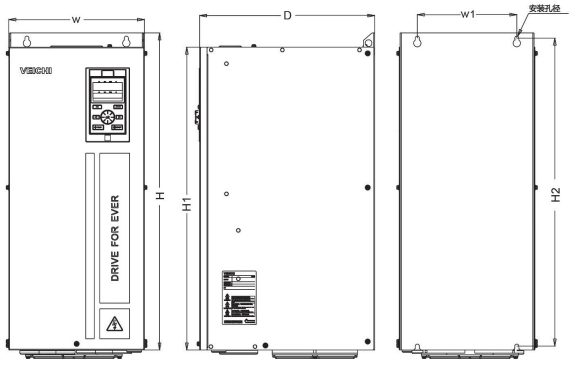


Model	Dimension (mm)					Installation size (mm)					Installation aperture
	W	H	H1	D	D1	W1	W2	H2	A	B	
AC310-T/S2-R75G-B	76	200	192	155	149	65	65	193	5.5	4	3-M4
AC310-T/S2-1R5G-B											
AC310-T/S2-2R2G-B	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
AC310-T/S2-004G-B											
AC310-T/S2-5R5G-B	116	320	307.5	175	169	98	100	307.5	9	6	3-M5
AC310-T3-R75G/1R5P-B	76	200	192	155	149	65	65	193	5.5	4	3-M4
AC310-T3-1R5G/2R2P-B											
AC310-T3-2R2G-B											
AC310-T3-004G/5R5P-B	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
AC310-T3-5R5G/7R5P-B											
AC310-T3-7R5G/011P-B	116	320	307.5	175	169	98	100	307.5	9	6	3-M5
AC310-T3-011G/015P-B											

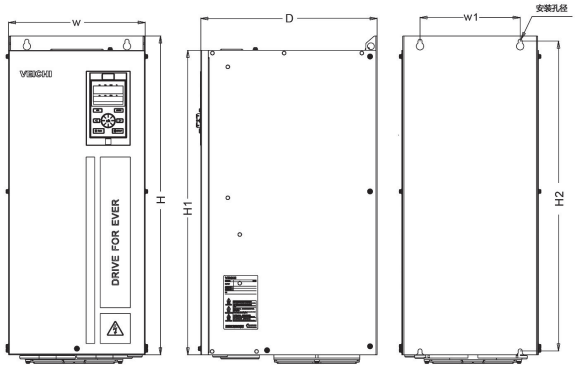


Model	Dimension (mm)					Installation size (mm)				Installation aperture
	W	H	H1	D	D1	W1	W2	H2	B	
AC310-T/S2-7R5G-B	142	383	372	225	219	125	100	372	6	4-M5
AC310-T/S2-011G-B										
AC310-T/S2-015G	172	430	/	225	219	150	150	416.5	7.5	4-M5
AC310-T2-018G										
AC310-T2-022G										
AC310-T3-015G/018P-B	142	383	372	225	219	125	100	372	6	4-M5
AC310-T3-018G/022P-B										
AC310-T3-022G/030P-B										
AC310-T3-030G/037P	172	430	/	225	219	150	150	416.5	7.5	4-M5
AC310-T3-037G/045P										

Iron case model

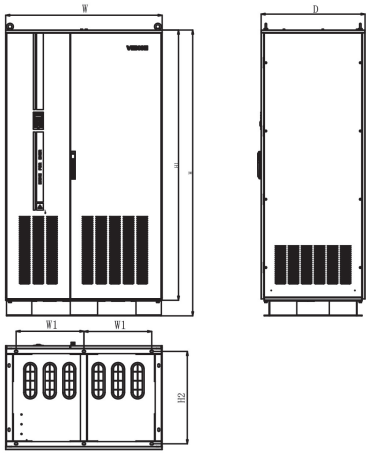


Model	Dimension (mm)				Installation size (mm)		Installation aperture
	W	H	H1	D	W1	H2	
AC310-T2-030G	240	560	535	310	176	544	4-M6
AC310-T2-037G							
AC310-T2-045G							
AC310-T2-055G	270	638	580	350	195	615	4-M8
AC310-T3-045G/055P	240	560	535	310	176	544	4-M6
AC310-T3-055G/075P							
AC310-T3-075G/090P							
AC310-T3-090G/110P	270	638	580	350	195	615	4-M8
AC310-T3-110G/132P							
AC310-T3-132G/160P-L	350	738	680	405	220	715	4-M8
AC310-T3-160G/185P-L							
AC310-T3-185G/200P-L	360	940	850	480	200	910	4-M16
AC310-T3-200G/220P-L							
AC310-T3-220G/250P-L							
AC310-T3-250G/280P-L	370	1140	1050	545	200	1110	4-M16
AC310-T3-280G/315P-L							
AC310-T6-022G/030P	240	560	535	310	176	544	4-M6
AC310-T6-030G/037P							
AC310-T6-037G/045P							
AC310-T6-045G/055P							
AC310-T6-055G/075P							
AC310-T6-075G/090P							
AC310-T6-090G/110P	270	638	580	350	195	615	4-M8
AC310-T6-110G/132P							
AC310-T6-132G/160P-L	350	738	680	405	220	715	4-M8
AC310-T6-160G/185P-L							
AC310-T6-185G/200P-L	360	940	850	480	200	910	4-M16
AC310-T6-200G/220P-L							
AC310-T6-220G/250P-L							
AC310-T6-250G/280P-L	370	1140	1050	545	200	1110	4-M16
AC310-T6-280G/315P-L							



Model	Dimension (mm)				Installation size (mm)		Installation aperture
	W	H	H1	D	W1	H2	
AC310-T3-315G/355P-L	400	1250	1140	545	240	1213	4-M16
AC310-T3-355G/400P-L							
AC310-T3-400G/450P-L							
AC310-T3-450G/500P-L	460	1400	1293	545	300	1363	4-M16
AC310-T3-500G/560P-L							
AC310-T3-560G/630P-L							
AC310-T6-315G/355P-L	400	1250	1140	545	240	1213	4-M16
AC310-T6-355G/400P-L							
AC310-T6-400G/450P-L							
AC310-T6-450G/500P-L	460	1400	1293	545	300	1363	4-M16
AC310-T6-500G/560P-L							
AC310-T6-560G/630P-L							

Cabinet model

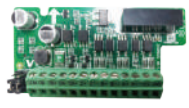


Model	Dimension (mm)				Installation size (mm)		Installation aperture
	W	H	H1	D	W1	H2	
AC310-T3-630G/710P-LD	1201	2198	2078	798	520	711	ϕ14
AC310-T3-710G/800P-LD							
AC310-T3-800G/900P-LD							
AC310-T3-900G/1000P-LD							
AC310-T3-1000G/1120P-LD							
AC310-T3-1120G-LD							
AC310-T6-630G/710P-LD							
AC310-T6-710G/800P-LD							
AC310-T6-800G/900P-LD							
AC310-T6-900G/1000P-LD							
AC310-T6-1000G/1120P-LD							
AC310-T6-1120G-LD							

Accessory List

AC300PG01

5V and 12V power PG cards available here for the incremental differential output encoder and the open collector output encoder.



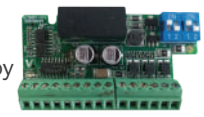
AC300IO1

4 × DI (50kHz at X10)
1 × DO + 1 × AI
1 × RO



AC300RT1

Four different ratios of 0.219, 0.286, 0.5(by default) and 0.58



KBD10-15

External LED keypad with potentiometer



AC300CAN1

CANopen board



AC300PN

For standard Profinet communication



AC300DP01

Profibus communication expansion card



KBD300-25

Dual-line external keypad with silicone buttons and digital potentiometer



AC300-GPRS

Equipment positioning and maintenance, real-time monitoring ,data collection

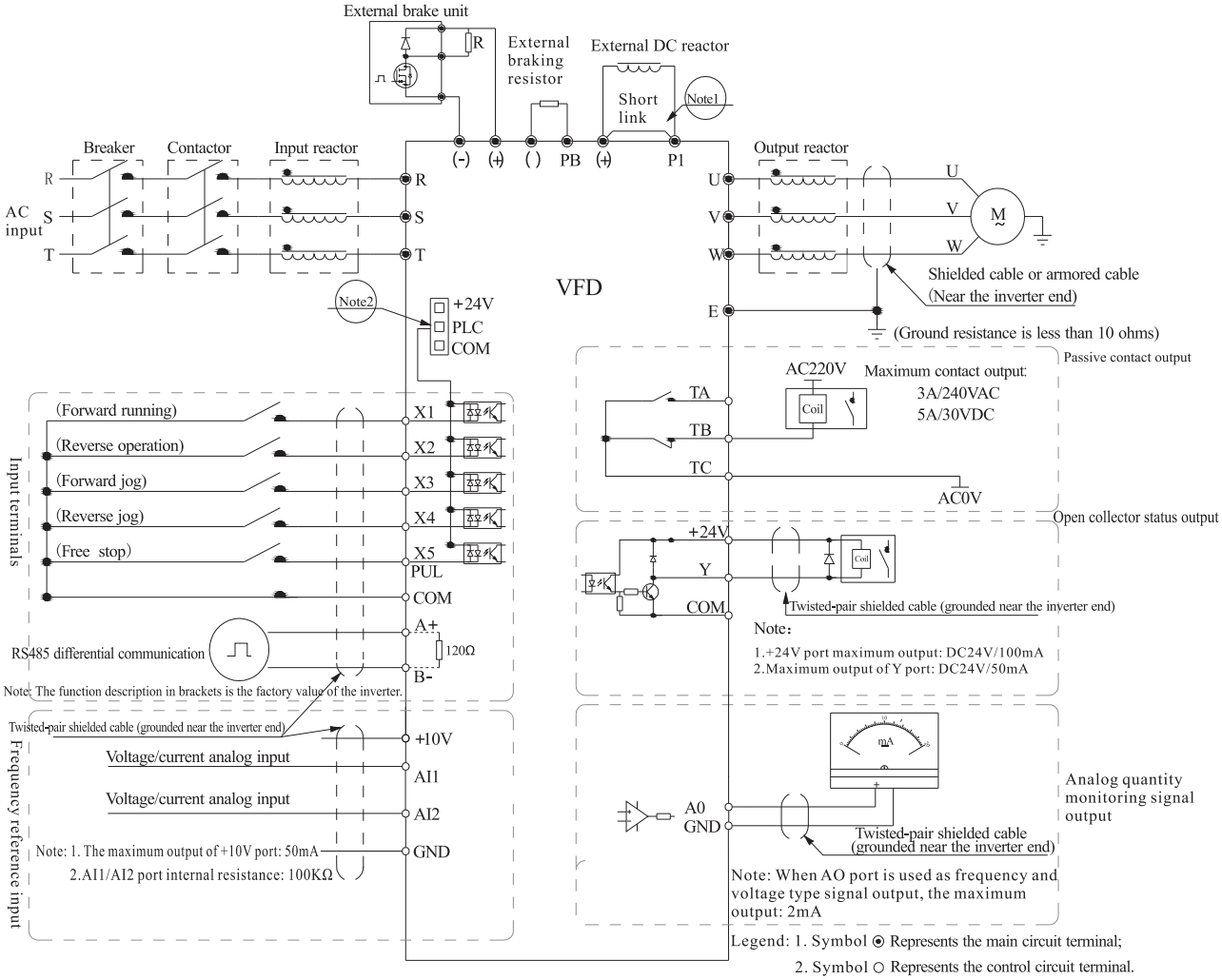


KBD300-L1 LCD keypad

User-friendly LCD interface



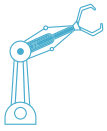
Wiring Diagram



Note:1.When installing the DC reactor, be sure to remove P1 (+) shorting tab between terminals.

2. Choose NPN or PNP transistor signal as input for multi-function input terminals (X1~ X5/PUL), and choose the drive internal power supply (+24V terminal), or the external power supply (PLC terminal) for bias voltage. The factory default "+24V" and "PLC" are shorted, and the position of the shorting tab is placed between RJ45 and the terminal.

Applications


Automated production line


Industrial mining


Machine tool


Municipal environmental protection


Lifting


Oilfield


Wires and cables


Woodworking machinery


Printing and packaging


Chemical industry


Industrial power


Plastics machinery


Textile


Elevator


Ceramics machinery


Food processing

VEICHI

Suzhou Veichi Electric Co.,Ltd.

No.1888 Songwei Road, Guoxiang Street, Wuzhong Economic and Technological Development Zone, Suzhou, Jiangsu Province, China.

Tel:+86-512-6617 1988 Fax:+86-512-6617 3610

Facebook: https://www.facebook.com/ veichigroup

WhatsApp:+86-138 2881 8903 Https://www.veichi.org

Official Website

*Version: Y5/2-12

Information in this manual is subject to change without notice.
Copyright © Veichi Electric. All rights reserved. Unauthorized reproduction prohibited.