



# MAC310-Series High-performance Vector AC Drive



# About us

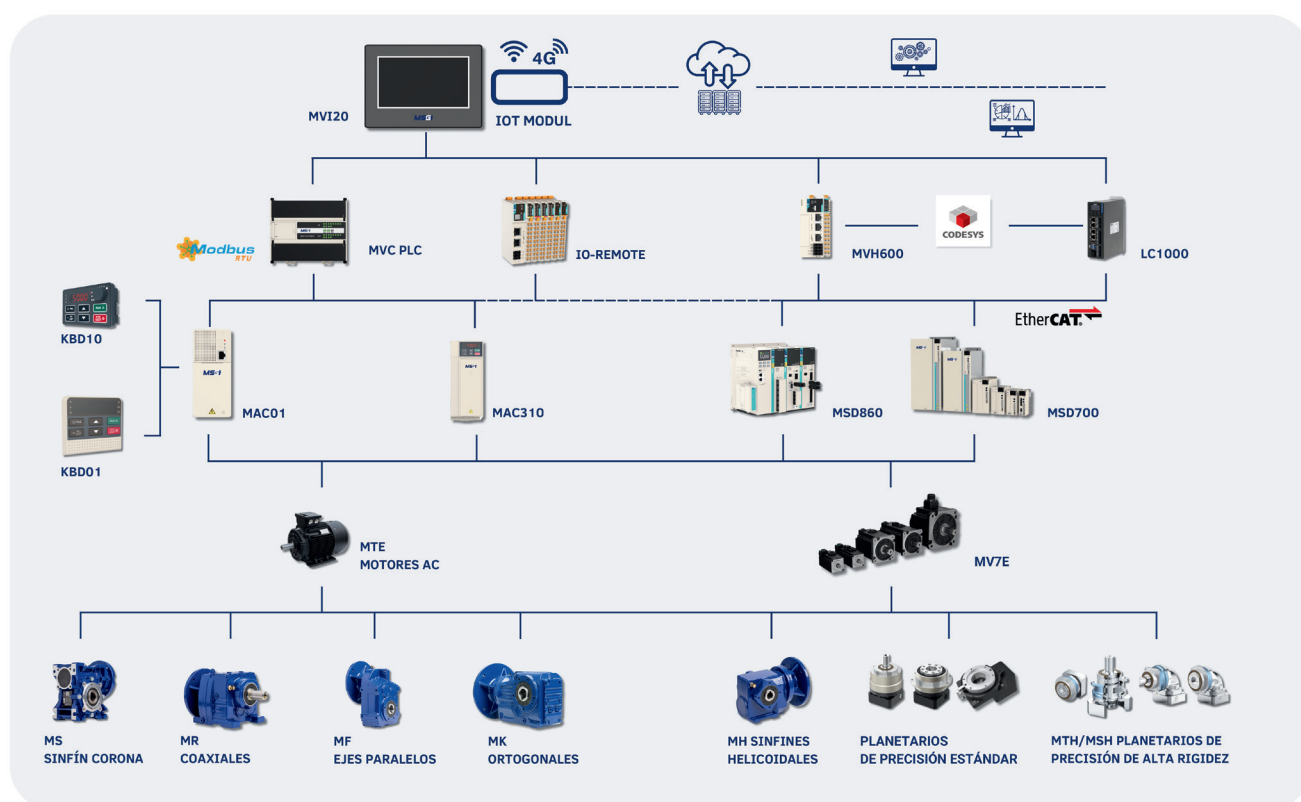
Welcome to Mechatronic System Group (MSG), a young team with solid experience in the industrial mechatronics sector.

We stand out by offering innovative products and a complete portfolio that covers the needs of machine manufacturers and engineering companies. At MSG, we not only provide advanced technical solutions, but we also accompany our customers throughout the machine definition process. With a national and international presence, we are committed to driving the cutting edge of mechatronics in industry.

At MSG, we pride ourselves on being at the forefront of technology by constantly innovating our products. In our electronics division, we excel with precision planetary gearboxes and helical gearboxes. Designed to be interchangeable with the vast majority of manufacturers, this gives us a unique competitive advantage over other brands. MSG are committed to offering advanced and flexible mechanical solutions to meet the demands of our customers.

MSG provides various products including inverters from 0.4kW to 1.200kW, servo systems from 50W to 90kW, motion controllers, PLC and HMI, which are applied in all sorts of fields occasions like lifting, mining, rail traffic, machine tools, compressors, plastic equipment, photo-voltaic pumping, construction, robots/mechanical arms, printing and packaging, chemical fibers for textile use, metallurgy, municipal works, petrol work and chemical engineering.

MSG has committed to electric drive and industrial control since it's foundation. As an all-round company engaged in R & D, manufacturing and sales on high-tech industrial automation products.



# MAC310 series high-performance AC drive

The MAC310-series high-performance vector AC drives further extend its advantages on functions and properties based on the design concept of AC300-series hardware architecture and new features of the latest generation of MSG products. Combined with the world-leading magnetic field-oriented vector control technology and compatibility of both asynchronous and synchronous motor control, this drive supports multiple control methods such as voltage-frequency separation EPS. On promised high performance and high reliability of the product, the layout of components is improved within the unchanged book-like narrow housing for higher usability and industry specialization to reduce choice phobia for customers. Multiple extension ports and accessories are designed to realize high performance, high reliability, high power density and high applicability.



## Simple outside while fine inside

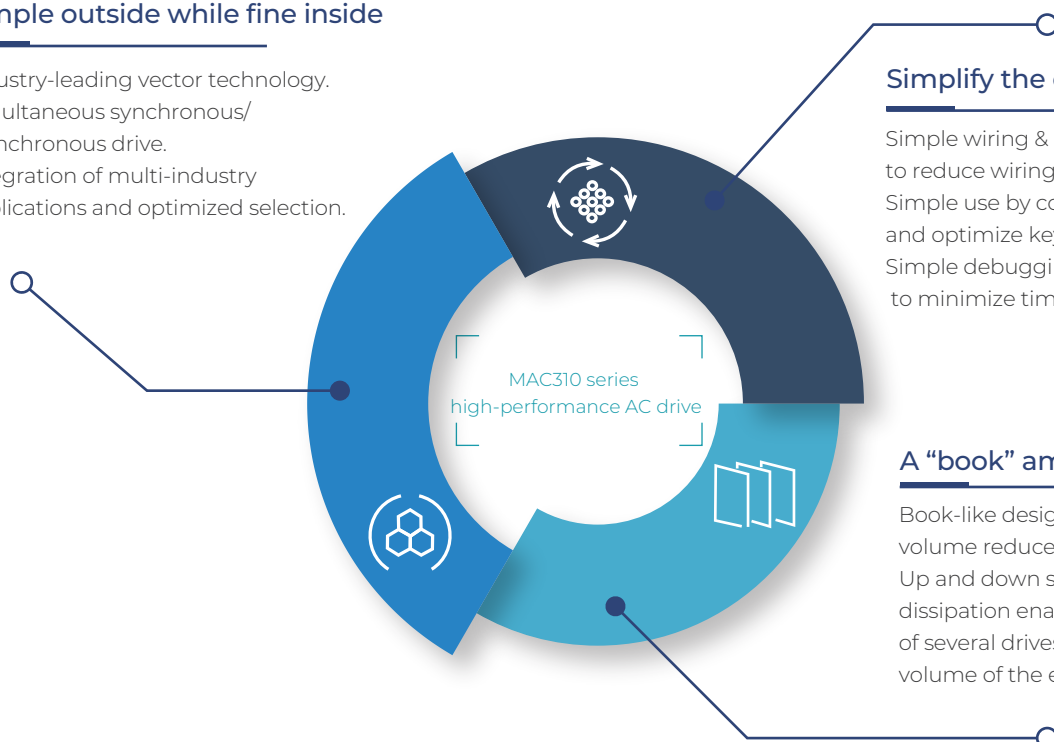
Industry-leading vector technology.  
Simultaneous synchronous/  
asynchronous drive.  
Integration of multi-industry  
applications and optimized selection.

## Simplify the complexity

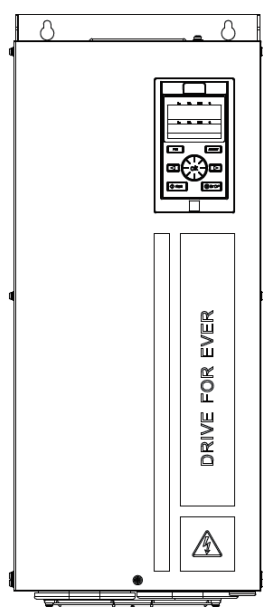
Simple wiring & European-style terminals  
to reduce wiring time and cost.  
Simple use by common parameter layout  
and optimize keys on the panel.  
Simple debugging via special upper software  
to minimize time and difficulty.

## 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 MAC310 series to quickly solve electro-magnetic interference          |
| 02 Synchronous and asynchronous drive integrated, open loop and closed loop supported | 08 Modular design of software and hardware for powerful extension                                        |
| 03 Precise torque excitation decoupling, excellent dynamic response performance       | 09 Overall three-proofings 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 keyboard design for the new external keyboard                                               |
| 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          | 0-600Hz                                                                   |
|             | Overload capacity               | T/S2: 50% rated current 24s,180% rated current 3.4s                       |
|             |                                 | T3: 150% rated current 89s, 180% rated current 10s, 200% rated current 3s |
|             |                                 | T6: 150% rated current 89s, 180% rated current 10s, 200% rated current 3s |

## Performance features

### Support multiple types of motors/loads

MAC310 series AC drives are capable to drive ordinary three-phase asynchronous motors, variable frequency motors, AC servo motors, permanent magnet synchronous motors, high-speed synchronous motors, spindle motors, torque motors, linear motors, etc to meet the diverse needs from customers.



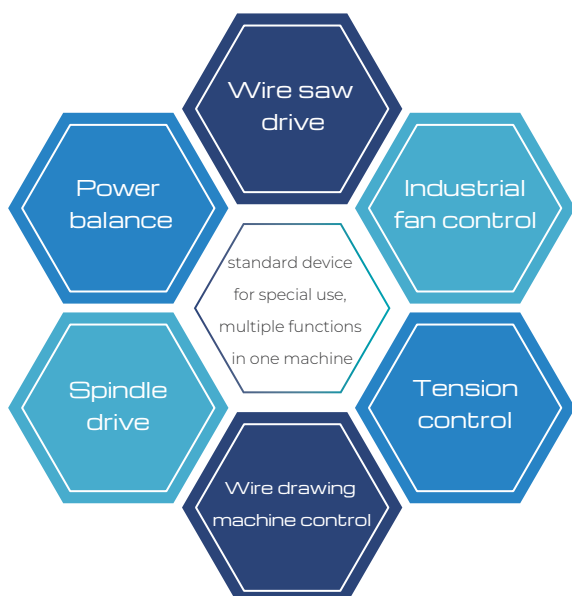
### Control mode selection

| Control mode                       | Speed control | Torque control | Position control | Applicable motor                                                   |
|------------------------------------|---------------|----------------|------------------|--------------------------------------------------------------------|
| VF mode                            | ●             |                |                  | Asynchronous motor                                                 |
| Voltage frequency separation       | ●             |                |                  | Torque motor, EPS power supply, series resonance                   |
| High performance vector without PG | ●             | ●              |                  | Asynchronous, permanent magnet synchronous                         |
| High performance vector with PG    | ●             | ●              | ●                | Asynchronous, permanent magnet synchronous, synchronous reluctance |

### Excellent control performance

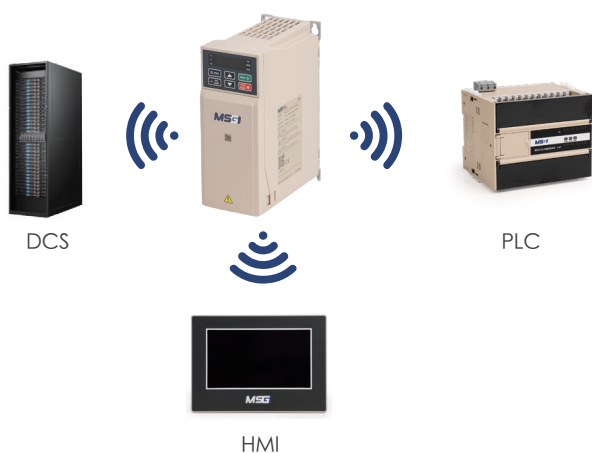
| Control mode                       | Speed control range | Starting torque | Applicable motor                                 |
|------------------------------------|---------------------|-----------------|--------------------------------------------------|
| High performance vector without PG | 1:200               | 150%            | Permanent magnet synchronous motor               |
| High performance vector without PG | 1:100               | 150%            | Asynchronous motor                               |
| High performance vector with PG    | 1:1000              | 200%            | Asynchronous, permanent magnet synchronous motor |

## Standard device for special use, rich functions in one



## Active response to industry 4.0

With the continuous reform of intelligent production, centralized product control is more common. MAC310 products can communicate with different types of DCS systems and PLC systems, and support multiple types of direct communication with HMI. MODBUS-RTU communication is standard while PROFIBUS-DP, CANOPEN and PROFINET are optional.

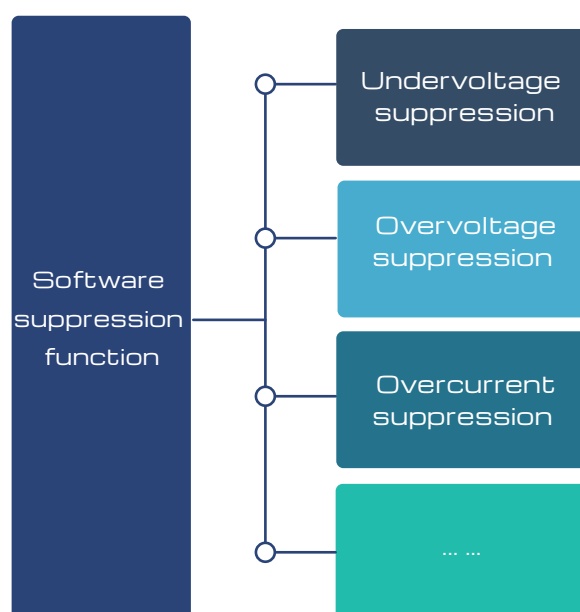


## Voltage frequency separation, professional drive

The comprehensive and abundant dedicated function algorithms for voltage-frequency separation can effectively drive torque motors and realize steady-state control of EPS. At the same time, it is widely used in a variety of high-voltage insulation test equipments in power industry.

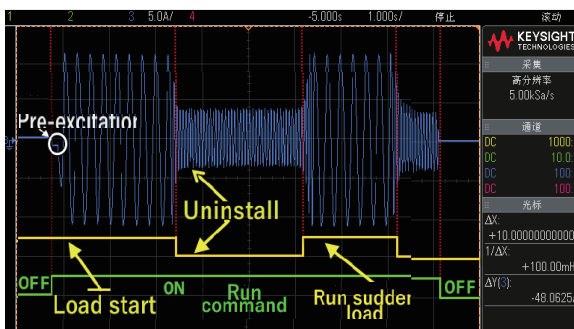


## Software suppression function

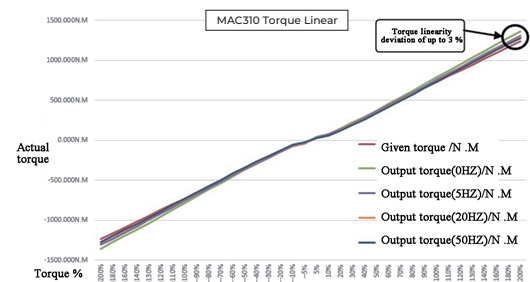


## High starting torque characteristics

Low frequency torque is large. In the closed-loop vector mode, 200% rated torque can be output at 0.0Hz, and it can run stably with load at ultra-low speed of 0.01Hz. Powerful low-torque output can effectively ensure the stability and smooth start-up.



Torque output is stable under torque control mode. The linearity deviation no larger than 3% greatly guarantees the stable operation of the equipment.



## Motor parameter self-tuning

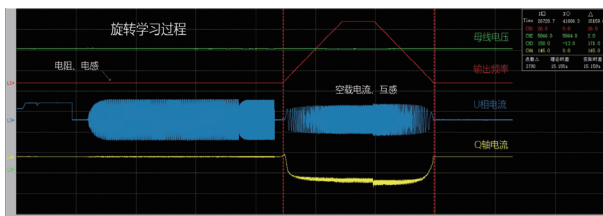
Parameters can still be accurately obtained by self-tuning no matter the motor is rotating or remains idle. Debugging is convenient and simple to maintain higher control accuracy and response speed.

### Rotary self-tuning

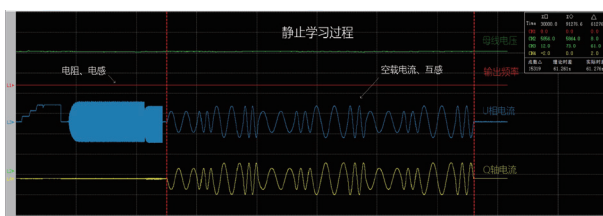
The load must be disconnected for tuning, and it is suitable for occasions with high control accuracy requirements.

### Static self-tuning

The powerful motor self-tuning algorithm can obtain the motor parameters when the motor is stationary, and the effect is comparable to rotating self-tuning.



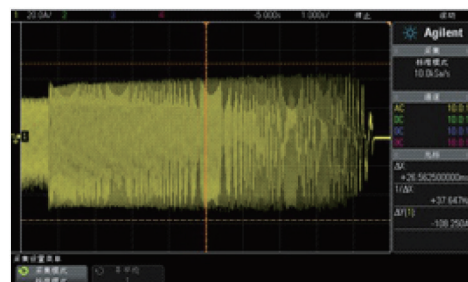
Rotary self-tuning



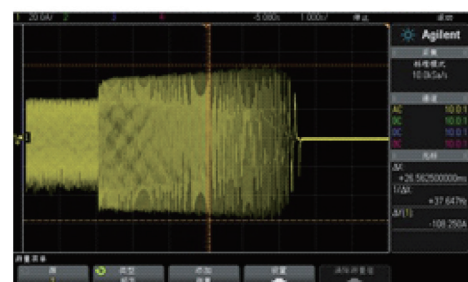
Static self-tuning

## Overexcitation braking function

In the case of partial inertia stop, quick braking can be achieved by overexcitation without any additional resistor, which greatly enhances user experience of the product. Moreover, the over-excitation braking function effectively suppresses busbar voltage rise when decelerating to avoid the over-voltage fault, and at the same time realizes fast braking to meet the requirements of quick stop during power failure.



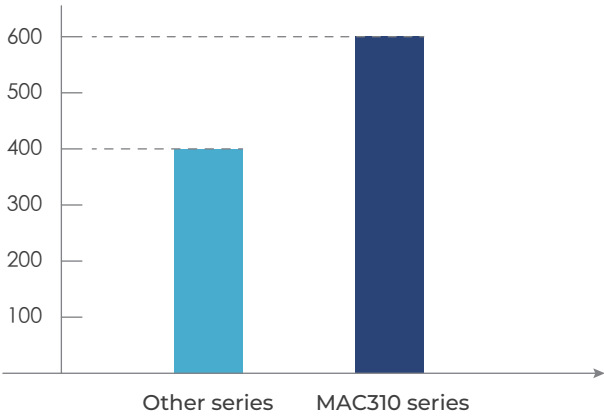
Overexcitation braking function is invalid



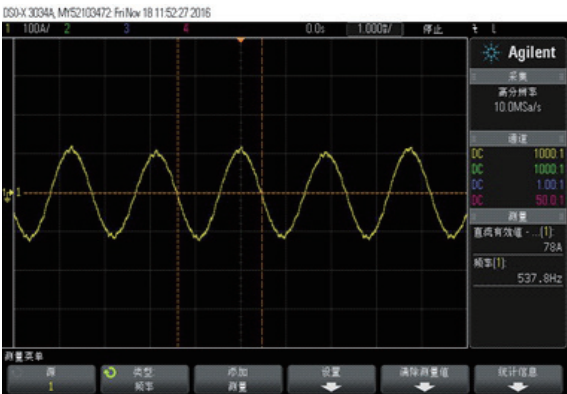
Overexcitation braking function is effective

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.



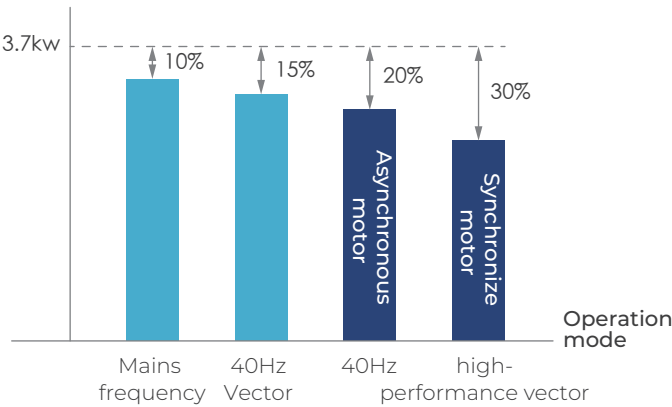
- Other series: The maximum output frequency under vector control is 320/400Hz;
- MAC 310 series: The maximum output frequency under vector control is 600Hz.



current waveform under 12-fold weak magnetic field

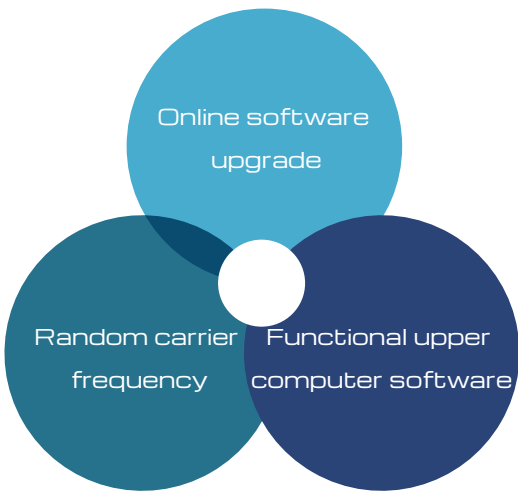
High energy saving

The use of a new generation of energy-saving control technology can realize the efficient operation of induction motors. It can reduce the excitation current according to the load and can also reduce motor and energy loss to the



Fan energy saving comparison chart

Other software functions



## Structural Hardware Characteristics

### Concise internal layout and convenient wiring

The narrow-body housing for MAC310 series is designed with strict dimensions but still, contains most of the common applications, various expansion interfaces and terminals which are distributed in an orderly manner for easy wiring.

#### SPI-A expansion interface

Any expansion card can be connected

#### Terminal resistance, input/output selection via the dial switch

#### RJ45 network interface

Extend with network cables

#### Panel keyboard

The indicator light is integrated with the five-digit digital tube

#### SPI-B expansion interface

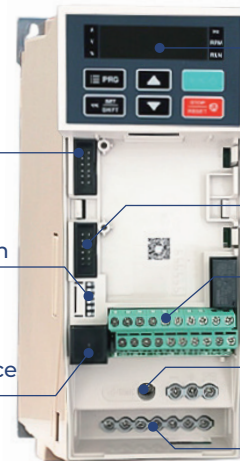
Any expansion card can be connected

#### Control terminals

#### EMC terminal

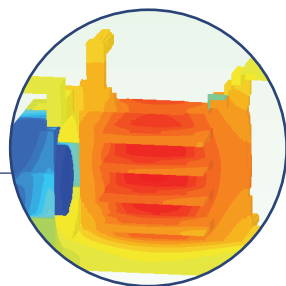
Quick disconnection to ground

#### Main terminal



### 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 MAC drive can run within the power range without any capacity reduction under high temperature.

### Number of standard terminals

| Serial number | Unit circuit                 | Quantity | Remarks                        |
|---------------|------------------------------|----------|--------------------------------|
| 1             | Normal X input               | 5        | Bidirectional input            |
| 2             | Normal Y output              | 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

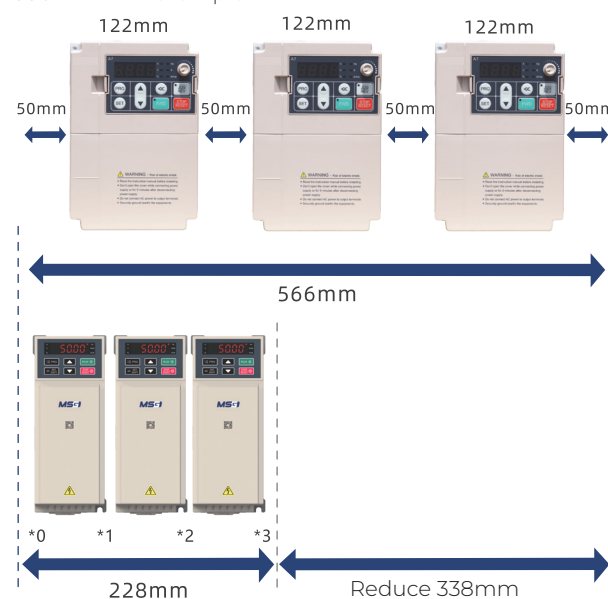
MAC310 whole series drives are designed with narrow bodies like a book, and the volume is 60% smaller than the original one, thus so called "book machine" among drives.



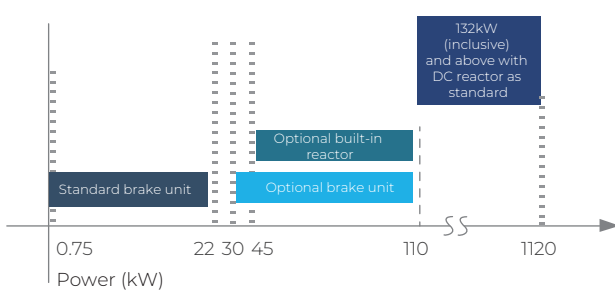
## Optimized structure design

Book-like housing plus reasonable use of space greatly saves the main cabinet space and cost for customers.

380V 2.2kW example



## 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

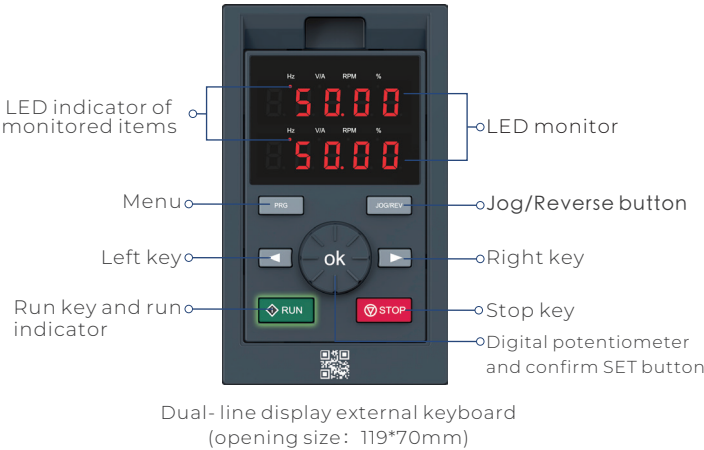
## Port characteristics selection via DIP switch

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 OFF       | RS485 | 485 terminal resistance   | RS485 communication access to 120 ohm terminal resistance   |
| AO-F OFF        | AO-F  | AO output frequency       | AO interface 0.0~100kHz frequency output                    |
| AO-I OFF        | AO-I  | AO output current         | AO interface 0~20mA current output or 4~20mA current output |
| AO-U OFF        | AO-U  | AO output voltage         | 0~10V voltage output                                        |
| AI1 U           | AI1   | AI1 input-current/voltage | AI1 input 0~20mA or 4~20mA or AI1 input 0~10V               |
| AI2 U           | AI2   | AI2 input-current/voltage | AI2 input 0~20mA or 4~20mA or AI2 input 0~10V               |

Keyboard operation

This newly designed panel keyboard is easy to use. Built-in keyboard and external keyboard can both display dual rows of data (select built-in or external keyboard by setting related parameters)

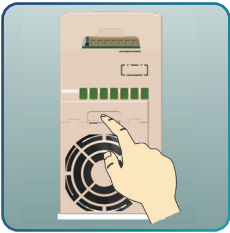


Note: Plastic case below 37KW adopts integrated keyboard, and steel case above 37KW adopts dual line keyboard.

| Name             | Status | Meaning     |
|------------------|--------|-------------|
| Unit indicator   | Hz     | Flashing/on |
|                  | A      | on          |
|                  | V      | Flashing/on |
|                  | RPM    | on          |
|                  | %      | Flashing/on |
| Status Indicator | RUN    | on          |
|                  | RUN    | Flashing    |
|                  | RUN    | off         |

Fast disassembly and assembly design of the fan

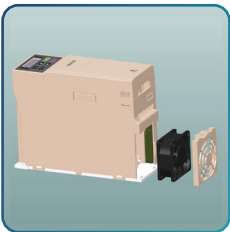
The innovative design of the fan structure on MAC310-series ensures the stability and efficiency of the fan and it can be quickly replaced and cleaned without any external tools.



Open the fan manually



Open the fan easily



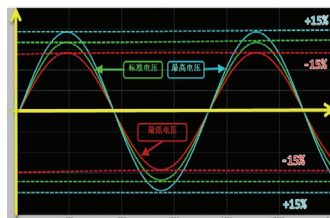
Remove the fan for replacement



Remove the fan cover for cleaning

## Wide voltage design

Allowable fluctuation of input voltage within  $\pm 15\%$  of the standard rated voltage, so it can be protected from voltage fluctuations to apply to demanding grid environment.



## European-style terminals

Standard European-style terminals that meet IEC 60998-2-1; UL 1059; UL 486E specification requirements can ensure safety and reliability and at the same time save wiring time: strip wire → set wire number → lock screws.

European-style terminals are used for main circuits on low-power MAC310 drives.

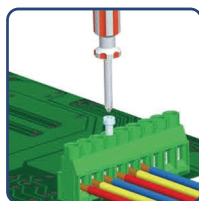
European-style terminals to the main circuit during wiring can save at least half of the time cost by other terminals thus greatly improve assembly efficiency for customers.

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 (mm <sup>2</sup> ) | 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 |              |                    |                                                |                         |

## EMC function

EMC allows quick connection or disconnection to ground through terminals to effectively avoid EMC interference.



EMC grounding

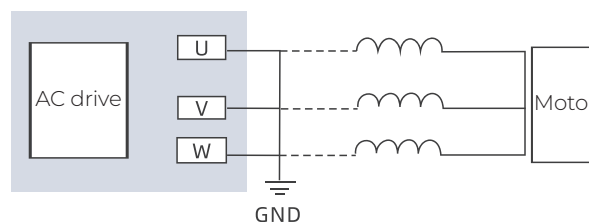
## Protection function

All-round protection for the internal and peripheral equipment of the AC drive is achieved by output grounding short circuit protection, internal buffer relay protection, fan drive circuit protection, external 24V DC short circuit protection, motor overload protection and other hardware protection functions.

|                      |                           |                  |                          |                          |
|----------------------|---------------------------|------------------|--------------------------|--------------------------|
| 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   |                  | Motor overload           | Motor detection failure  |
|                      | Excessive speed deviation |                  |                          |                          |

## New motor grounding short-circuit detection

Short-circuit to ground monitoring is on once the motor is on power, and protection will be activated immediately once short circuit is detected and the drive will be forbidden to start.



## Expandability

### Superb expansion capability

Multiple expansion interfaces are designed to meet customized needs.

There are two SPI high-speed interfaces on the MAC310 control boards, and the control boards will automatically identify the expansion cards and their parameter groups.

### Expansion Card

| Expansion card model              | Note                                |
|-----------------------------------|-------------------------------------|
| IO Expansion Card                 | Optional, high-speed pulse, relay   |
| RT card                           | Optional, default software tracking |
| PG                                | Optional, multi-type encoder        |
| RT card                           | Optional                            |
| Simple logic board expansion card | Optional                            |
| GPRS Card                         | Optional                            |

### IO Expansion Card

| Attribute              | Terminal                    | Description                                             |
|------------------------|-----------------------------|---------------------------------------------------------|
| Input IO               | X6/X7/X8/X10                | PLC/COM                                                 |
| High-speed pulse input | X10                         | 0-100KHz                                                |
| Digital output         | Expansion terminal Y2       | DC24V/50mA                                              |
| Relay output           | Expansion relay 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 expansion

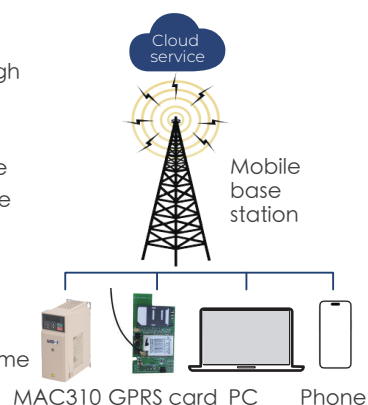
The AC drive replaces the PLC to perform simple logic control. Program development environment of the widely used MELSEC programmable controller is used here, while common and comprehensive function blocks are also integrated here.

### MSG IOT

Intelligent modules with high positioning accuracy, are easy to install.

GPRS and GSM dual-mode communication modes are available with stable operation and reliable performance.

Through the remote monitoring module, real-time online monitoring and remote fault diagnosis can be realized to provide customers with more value-added services.



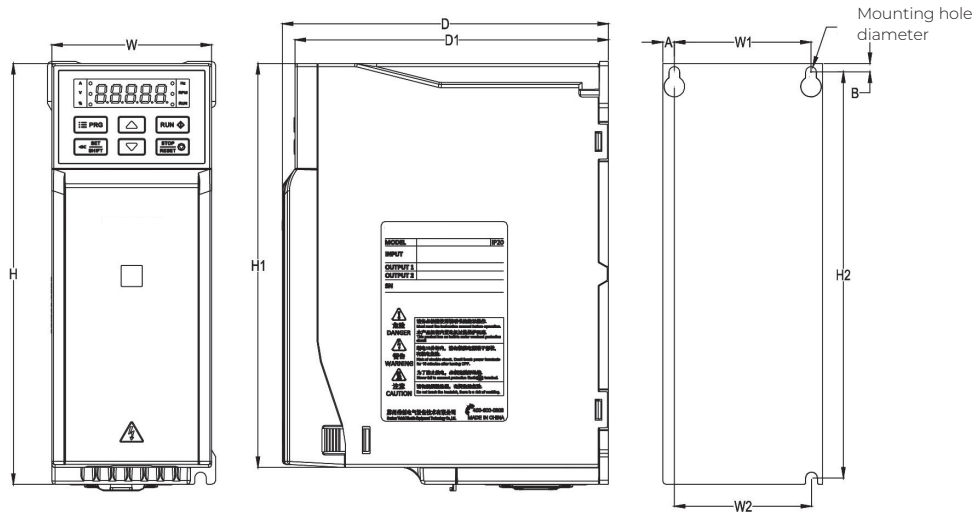
### Communication expansion card



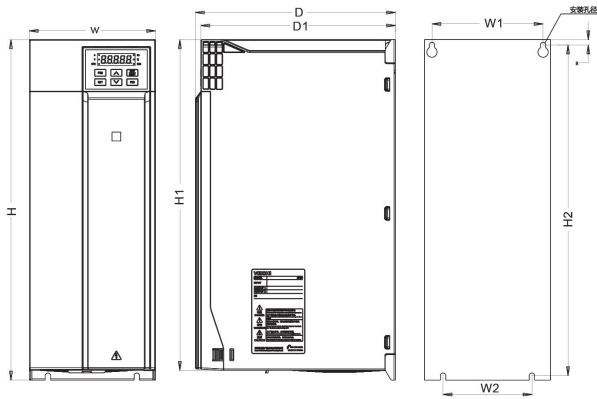
| Communication expansion card model | Note     |
|------------------------------------|----------|
| Modbus-RTU                         | Optional |
| PROFIBUS-DP                        | Optional |
| CANopen                            | Optional |
| PROFINET                           | Optional |
| .....                              |          |

## Installation Dimension Diagram

### Plastic case model

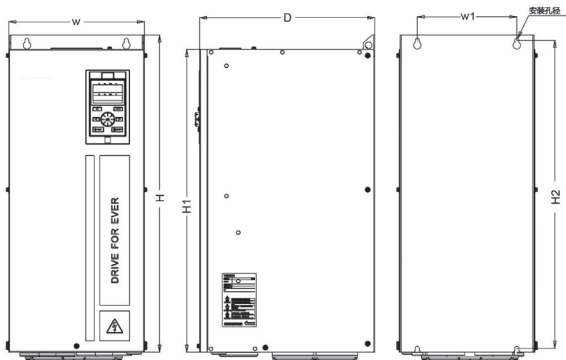


| Model                 | Dimension ( mm ) |     |       |     |     | Installation size ( mm ) |      |       |     |     | Installation aperture |
|-----------------------|------------------|-----|-------|-----|-----|--------------------------|------|-------|-----|-----|-----------------------|
|                       | W                | H   | H1    | D   | D1  | W1                       | W2   | H2    | A   | B   |                       |
| MAC310-T/S2-R75G-B    | 76               | 200 | 192   | 155 | 149 | 65                       | 65   | 193   | 5.5 | 4   | 3-M4                  |
| MAC310-T/S2-1R5G-B    |                  |     |       |     |     |                          |      |       |     |     |                       |
| MAC310-T/S2-2R2G-B    | 100              | 242 | 231   | 155 | 149 | 84                       | 86.5 | 231.5 | 8   | 5.5 | 3-M4                  |
| MAC310-T/S2-004G-B    |                  |     |       |     |     |                          |      |       |     |     |                       |
| MAC310-T/S2-5R5G-B    | 116              | 320 | 307.5 | 175 | 169 | 98                       | 100  | 307.5 | 9   | 6   | 3-M5                  |
| MAC310-T3-R75G/1R5P-B | 76               | 200 | 192   | 155 | 149 | 65                       | 65   | 193   | 5.5 | 4   | 3-M4                  |
| MAC310-T3-1R5G/2R2P-B |                  |     |       |     |     |                          |      |       |     |     |                       |
| MAC310-T3-2R2G-B      |                  |     |       |     |     |                          |      |       |     |     |                       |
| MAC310-T3-004G/5R5P-B | 100              | 242 | 231   | 155 | 149 | 84                       | 86.5 | 231.5 | 8   | 5.5 | 3-M4                  |
| MAC310-T3-5R5G/7R5P-B |                  |     |       |     |     |                          |      |       |     |     |                       |
| MAC310-T3-7R5G/011P-B | 116              | 320 | 307.5 | 175 | 169 | 98                       | 100  | 307.5 | 9   | 6   | 3-M5                  |
| MAC310-T3-011G/015P-B |                  |     |       |     |     |                          |      |       |     |     |                       |



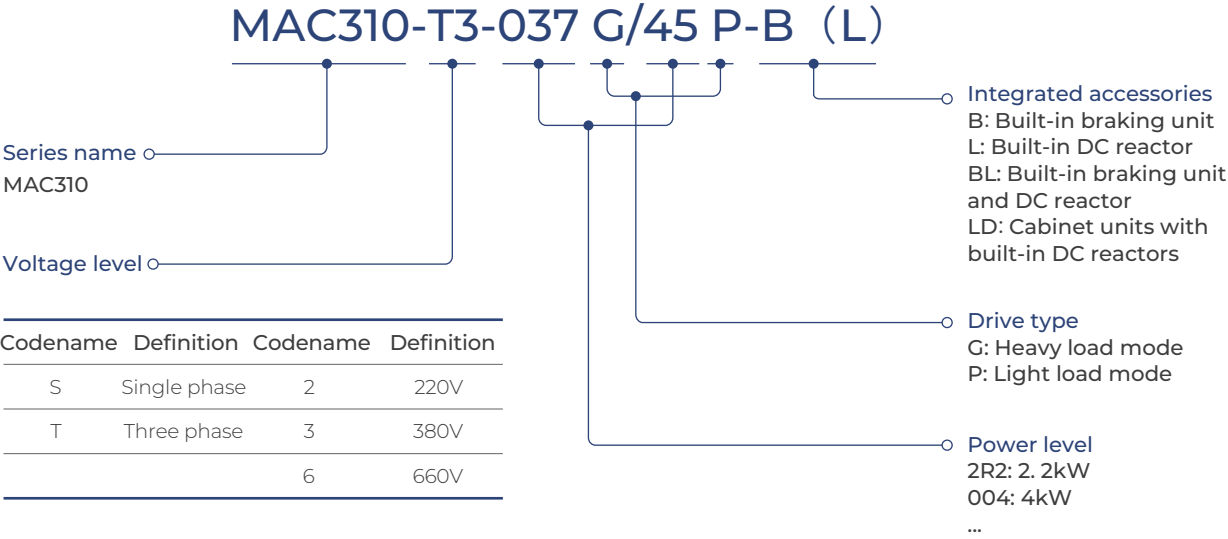
| Model                 | Dimension ( mm ) |     |     |     |     | Installation size ( mm ) |     |       |     | Installation aperture |
|-----------------------|------------------|-----|-----|-----|-----|--------------------------|-----|-------|-----|-----------------------|
|                       | W                | H   | H1  | D   | D1  | W1                       | W2  | H2    | B   |                       |
| MAC310-T/S2-7R5G-B    | 142              | 383 | 372 | 225 | 219 | 125                      | 100 | 372   | 6   | 4-M5                  |
| MAC310-T/S2-011G-B    |                  |     |     |     |     |                          |     |       |     |                       |
| MAC310-T/S2-015       | 172              | 430 | /   | 225 | 219 | 150                      | 150 | 416.5 | 7.5 | 4-M5                  |
| MAC310-T/2-018G       |                  |     |     |     |     |                          |     |       |     |                       |
| MAC310-T2-022G        |                  |     |     |     |     |                          |     |       |     |                       |
| MAC310-T3-015G/018-B  | 142              | 383 | 372 | 225 | 219 | 125                      | 100 | 372   | 6   | 4-M5                  |
| MAC310-T3-018G/022P-B |                  |     |     |     |     |                          |     |       |     |                       |
| MAC310-T3-022G/030P-B |                  |     |     |     |     |                          |     |       |     |                       |
| MAC310-T3-030G/037P   | 172              | 430 | /   | 225 | 219 | 150                      | 150 | 416.5 | 7.5 | 4-M5                  |
| MAC310-T3-037G/045P   |                  |     |     |     |     |                          |     |       |     |                       |

## Iron case model



| Model                 | Dimension ( mm ) |      |      |     | Installation size ( mm ) |      | Installation aperture |
|-----------------------|------------------|------|------|-----|--------------------------|------|-----------------------|
|                       | W                | H    | H1   | D   | W1                       | H2   |                       |
| MAC310-T2-030G        | 240              | 560  | 535  | 310 | 176                      | 544  | 4-M6                  |
| MAC310-T2-037G        |                  |      |      |     |                          |      |                       |
| MAC310-T2-045G        |                  |      |      |     |                          |      |                       |
| MAC310-T2-055G        | 270              | 638  | 580  | 350 | 195                      | 615  | 4-M8                  |
| MAC310-T3-045G/055G   | 240              | 560  | 535  | 310 | 176                      | 544  | 4-M6                  |
| MAC310-T3-055G/075P   |                  |      |      |     |                          |      |                       |
| MAC310-T3-075G/090P   |                  |      |      |     |                          |      |                       |
| MAC310-T3-090G/110P   | 270              | 638  | 580  | 350 | 195                      | 615  | 4-M8                  |
| MAC310-T3-110G/132P   |                  |      |      |     |                          |      |                       |
| MAC310-T3-132G/160P-L | 350              | 738  | 680  | 405 | 220                      | 715  | 4-M8                  |
| MAC310-T3-160G/185P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-185G/200P-L | 360              | 940  | 850  | 480 | 200                      | 910  | 4-M16                 |
| MAC310-T3-200G/220P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-220G/250P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-250G/280P-L | 370              | 1140 | 1050 | 545 | 200                      | 1110 | 4-M16                 |
| MAC310-T3-280G/315P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-022G/030P   | 240              | 560  | 535  | 310 | 176                      | 544  | 4-M6                  |
| MAC310-T6-030G/037P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-037G/045P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-045G/055P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-055G/075P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-075G/090P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-090G/110P   | 270              | 638  | 580  | 350 | 195                      | 615  | 4-M8                  |
| MAC310-T6-110G/132P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-132G/160P-L | 350              | 738  | 680  | 405 | 220                      | 715  | 4-M8                  |
| MAC310-T6-160G/185P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-185G/200P-L | 360              | 940  | 850  | 480 | 200                      | 910  | 4-M16                 |
| MAC310-T6-200G/220P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-220G/250P   |                  |      |      |     |                          |      |                       |
| MAC310-T6-250G/280P   | 370              | 1140 | 1050 | 545 | 200                      | 1110 | 4-M16                 |
| MAC310-T6-180G/315P   |                  |      |      |     |                          |      |                       |

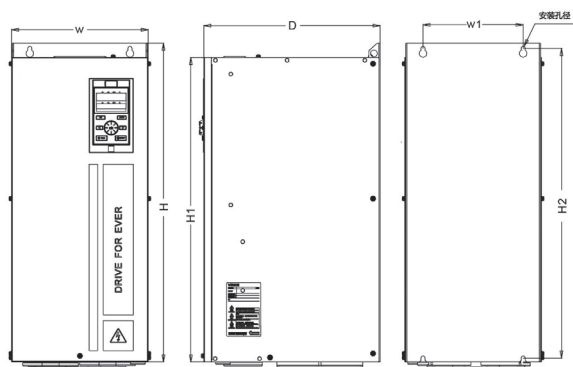
## Model Description



## Rated output current

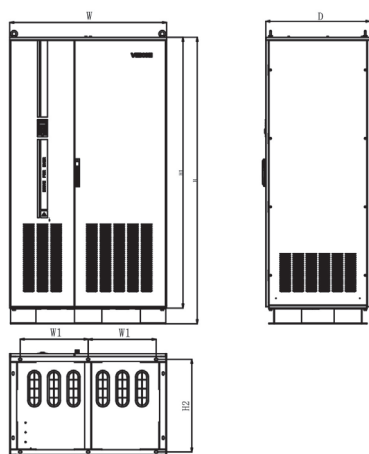
| Voltage         | 220V                     | 380V | 660V |
|-----------------|--------------------------|------|------|
| Power level(kW) | Rated output current (A) |      |      |
| 0.75            | 4                        | 3    |      |
| 1.5             | 7                        | 4    |      |
| 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 |



| Model                 | Dimension ( mm ) |      |      |     | Installation size ( mm ) |      | Installation aperture |
|-----------------------|------------------|------|------|-----|--------------------------|------|-----------------------|
|                       | W                | H    | H1   | D   | W1                       | H2   |                       |
| MAC310-T3-315G/355P-L | 400              | 1250 | 1140 | 545 | 240                      | 1213 | 4-M16                 |
| MAC310-T3-355G/400P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-400G/450P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-450G/500P-L | 460              | 1400 | 1293 | 545 | 300                      | 1363 | 4-M16                 |
| MAC310-T3-500G/560P-L |                  |      |      |     |                          |      |                       |
| MAC310-T3-560G/630P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-315G/355P-L | 400              | 1250 | 1140 | 545 | 240                      | 1213 | 4-M16                 |
| MAC310-T6-355G/400P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-400G/450P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-450G/500P-L | 460              | 1400 | 1293 | 545 | 300                      | 1363 | 4-M16                 |
| MAC310-T6-500G/560P-L |                  |      |      |     |                          |      |                       |
| MAC310-T6-560G/630P-L |                  |      |      |     |                          |      |                       |

## Cabinet model

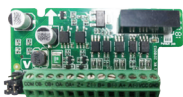


| Model                    | Dimension ( mm ) |      |      |     | Installation size ( mm ) |     | Installation aperture |
|--------------------------|------------------|------|------|-----|--------------------------|-----|-----------------------|
|                          | W                | H    | H1   | D   | W1                       | H2  |                       |
| MAC310-T3-630G/710P-LD   | 1201             | 2198 | 2078 | 798 | 520                      | 711 | φ14                   |
| MAC310-T3-710G/800P-LD   |                  |      |      |     |                          |     |                       |
| MAC310-T3-800G/900P-LD   |                  |      |      |     |                          |     |                       |
| MAC310-T3-900G/1000P-LD  |                  |      |      |     |                          |     |                       |
| MAC310-T3-1000G/1120P-LD |                  |      |      |     |                          |     |                       |
| MAC310-T3-1120G-LD       |                  |      |      |     |                          |     |                       |
| MAC310-T6-630G/710P-LD   |                  |      |      |     |                          |     |                       |
| MAC310-T6-710G/800P-LD   |                  |      |      |     |                          |     |                       |
| MAC310-T6-800G/900P-LD   |                  |      |      |     |                          |     |                       |
| MAC310-T6-900G/1000P-LD  |                  |      |      |     |                          |     |                       |
| MAC310-T6-1000G/1200P-LD |                  |      |      |     |                          |     |                       |
| MAC310-T6-1120G-LD       |                  |      |      |     |                          |     |                       |

## Accessory List

### MAC300PG01

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



### MAC300IO1

Four digital inputs(X10 supports 50k pulse input), one digital output, one analog input and one relay output.  
Support temperature detection(PT100,PT1000 and KTY84)



### MAC300RT1

Support four different ratios of 0.219, 0.286,0.5,0.58,the factory default ratio is 0.5



### KBD10-15

External LED five-digit display keyboard ,potentiometer speed control



### MAC300CAN1

CANopen expansion card



### MAC300PN card

Support standard profinet



## MAC300DP01

Profibus communication expansion card



## KBD300-25

Dual line external five-digit display keyboard, silicone buttons, digital potentiometer



## MAC300-GPRS

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

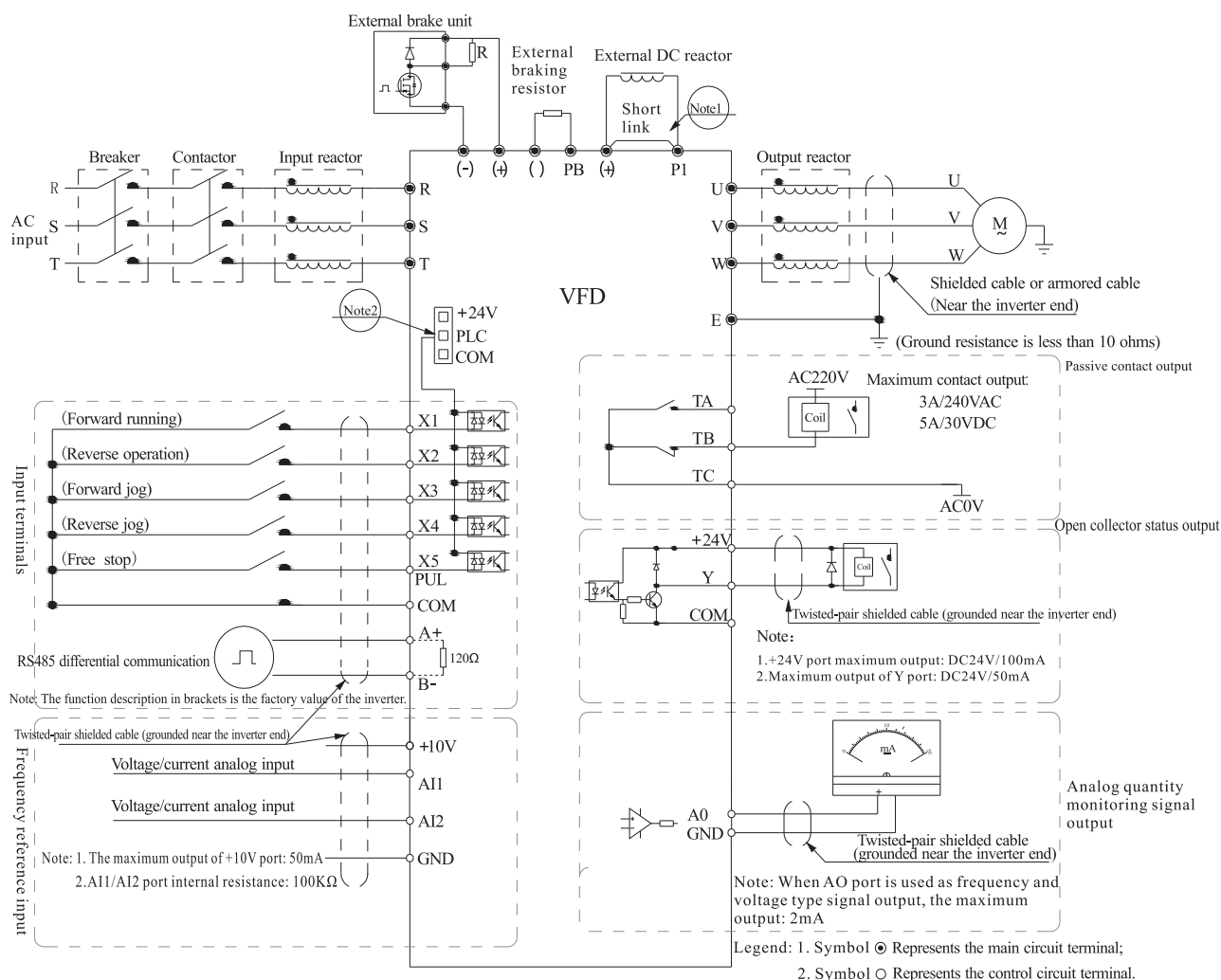


## KBD300-L1 LCD keyboard

User-friendly LCD interface



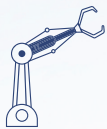
## Wiring Diagram



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



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Official Website

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