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EXCELLENT & SMART

Create a better life with smart drive

CUMARK

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CUMARK

ES610/ES710/ES710S Series

High performance industrial variable frequency drives



Official website

WeChat public platform

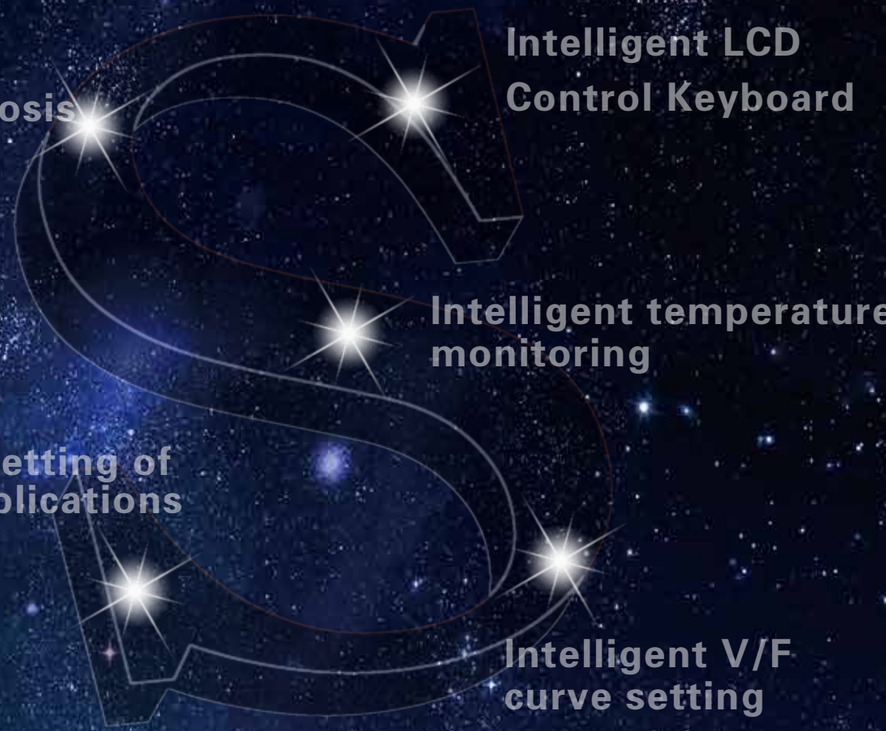
ES610/ES710/ES710S series variable frequency drive

Excellent & Efficient
Intelligence Drives the Future

The ES610/ES710/ES710S series variable frequency drives are Cumark newly designed book-type, high-performance vector type, high-reliability, industrial-grade engineering transmission product designed. Most of the power segments can meet the requirements of 50℃ high temperature environment without derating operation. The series comes standard with STO safe torque function.

The products rely on excellent performance, rich functions and perfect structure to better meet the industrial control needs in different fields in harsh environments, and provide comprehensive competitive advantages with their excellent quality, friendly human-machine interface and convenient services.





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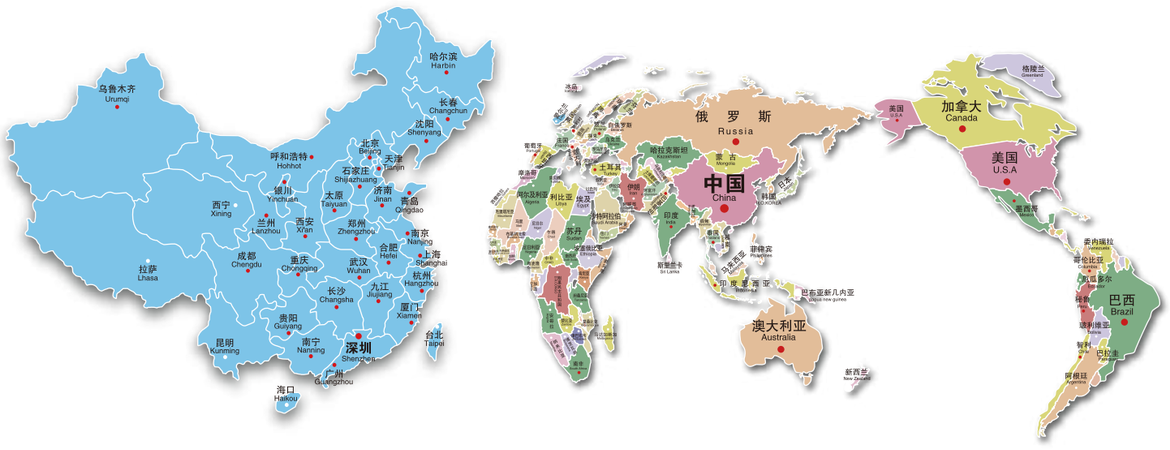
Company Profile

SHENZHEN CUMARK SCI.& TECH CO.,LTD. was founded on March 19, 2001. It has been focusing on R&D, production and sales of power electronic transmission and automation products . It is a national high-tech enterprise and awarded as “special frequency conversion engineering technology R&D center of Guangdong Province”. It relies on excellent technology and many years accumulated industry application experience, and provides users with efficient and reliable intelligent drive products and complete automation solutions.



CUMARK ’s high, medium and low voltage series of intelligent frequency inverters and their relatd automation integrated products have a wide range of application prospects. They can be widely used in CNC machine tools and robots, marine engineering equipment, ships, rail transit equipment, Energy-saving and new energy vehicles, agricultural machinery and equipment, logistics and warehousing, electric power, coal, petrochemical, chemical, environmental protection, pharmaceuticals, non-ferrous metals, steel and other fields can help manufacturers improve equipment automation, energy conservation and efficiency, and reduce production costs, help the equipment manufacturing industry products green and intelligent upgrades and improve market competitiveness.

Cumark global service network



List of ES Series Frequency Converters



Type	Performance	Target market	Series	Appearance
General purpose industrial variable frequency Drive	1）High reliability 2）High ease of use 3）Scalar control and SVC vector control 4）Compatible with permanent magnet synchronous and three-phase asynchronous motor drive 5）Standard intelligent LCD keyboard 6）Modular and compact structural design 7）Supporting multiple industrial fieldbuses 8）Standard STO safety torque function	Ceramic equipment textile machinery Air flotation motor Magnetic levitation motor Woodworking machinery Glass machinery Logistics warehousing Food and Beverage Squeezing equipment Rubber and plastic machinery Wire drawing machine Belt conveyor centrifuge compressor Fan water pump etc.	ES610（asynchronous、permanent magnet synchronous motor） 220V 3PH 0.4-18.5KW 380V 3PH 0.75-37KW	
High performance industry Variable frequency Drive	1）High reliability 2）High ease of use 3）Scalar control, SVC and FVC vector control 4）Compatible with permanent magnet synchronous and three-phase asynchronous motor drives 5）Standard intelligent LCD keyboard 6）Modular and compact structural design 7）Supporting multiple industrial fieldbuses 8）Standard STO safety torque function 9）Support multiple encoders to achieve high-performance and high-precision control 10）External 24V power supply optional card, allowing for parameter setting and communication debugging without high-voltage power supply	Lifting and hoist Shipbuilding Automobile manufacturing Ceramic equipment textile machinery Chemical fiber machinery Slitting equipment Air flotation motor Magnetic levitation motor Direct drive motor Drum motor Flywheel energy storage Rotary cutting machine Wire drawing machine CNC machine Dyeing and finishing equipment Logistics equipment Woodworking machinery Food and Beverage centrifuge compressor etc.	ES710（asynchronous、permanent magnet synchronous motor） 220V 3PH 0.4-18.5KW 380V 3PH 0.75-37KW	
High performance industry Variable frequency servo Drive	1）High reliability 2）High ease of use 3）SVC and FVC vector control 4）Supports servo motors, permanent magnet synchronous motors, and three-phase asynchronous motors 5）Standard intelligent LCD keyboard 6）Modular and compact structural design 7）Supporting multiple industrial fieldbuses 8）Standard STO safety torque function 9）Support multiple encoders to achieve high-performance and high-precision control 10）External 24V power supply optional card, allowing for parameter setting and communication debugging without the need for high-voltage power supply 11）Supports fixed length, arbitrary angle position control 12）Support positioning function	CNC machine Bending machine Lifting and hoist Flying shear equipment Logistics equipment High speed electric spindle Stamping machinery Paper making machinery Printing machinery Film-forming machinery textile machinery Stacker crane etc.	ES710S（asynchronous, permanent magnet synchronous, servo motor） 380V 3PH 0.75-30KW	

Technical Data

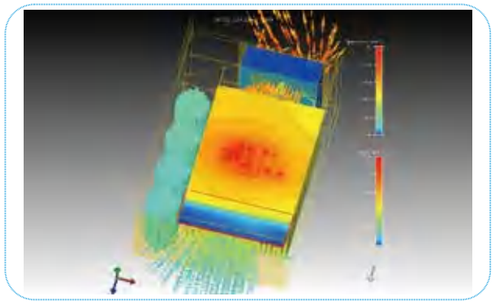
Item		Specification and Technical Data
Main power connection	Input voltage U1	three-phase 220V，208-240V，±15%；three-phase 380V，380-460V，±15%
	Input frequency f1	50...60Hz ±5Hz
	Output voltage U2	0...U1 (V)(The maximum output voltage equals the input power voltage.)
	Output frequency f2	0-599Hz
	Carrier frequency	2-8 K (The device can intelligently and automa☒cally make op☒mal adjustment according to load characteris☒cs and drive temperature.)Consult manufacturers for higher carrier frequencies
	Input voltage unbalance degree	Maximum: ±3% of rated inter-phase input voltage
	Efficiency	≈ 98% (when opera☒ng at rated power)
Basic functions	Speed range	0-599Hz①
	Resolu☒on of given speed	Digital se☒ng: 1RPM Analog se☒ng: 0.025% of maximum RPM
	Control mode	SVC control / FVC vector control/Space voltage vector control
	Star☒ng speed	200% @ 0.25Hz @ Open loop (SVC) 200% @ 0Hz @ Close loop (FVC)
	Speed ra☒o	1:200 @ Open loop (SVC) 1:3000 @ Close loop (FVC)
	Steady-speed precision	±0.5% @ Open loop (SVC)
	Overload capacity	120% 140% 150% rated current 60S @ 40 ℃/50 ℃ (refer to power selec☒on table for details) In other cases, the dura☒on depends on the temperature of the transmission.
	Torque boost	Automa☒c torque boost. Manual torque boost 0-10.00
	Accelera☒on and decelera☒on curves	straight-line or S-curve accelera☒on and decelera☒on mode Two accelera☒on ☒me values. The accelera☒on and decelera☒on ☒me range : 0.0s-6500.0s
	Simple PLCfunc☒on	Achieve opera☒onof up-to-16-stages speed(DI terminal implementa☒on)
	Built-in PID	Conveniently achieve the process control close-loop control system
	Automa☒c voltage regula☒on (AVR)	When the grid voltage changes, the device automa☒cally maintainsconstant output voltage.
	Overvoltage and overcurrent stall control	The current and voltage are automa☒cally limited during running to avoid jump faults due to frequent overcurrent and overvoltage
Enhancements	Torque limi☒ng and control	The torque is automa☒cally limited opera☒ng (to avoid frequent overcurrent jumping fault due to too large torque).
	Protec☒on func☒on	Output shortcircuit protec☒on, input & output phase loss protec☒on, overcurrent protec☒on, overvoltage protec☒on,undervoltage protec☒on, overheat protec☒on, overload protec☒on, brake chopper overload protec☒on, brake chopper shortcircuit protec☒on, brake resistor overload protec☒on etc
	Non-stop during transient interrup☒on	When the power grid suddenly loses power or drops abnormally, the frequency inverter can be maintained to con☒nue running, and the dura☒on depends on the mechanical iner☒a of the load at the moment of opera☒on
	Speed tracking restart	Asynchronous motor speed tracking start can be realized (standard) and synchronous motor speed tracking start (op☒onal)
	Timing control	Timing control func☒on. The ☒me range and precision is 0.0-6500.0(min).
	Switching mul☒ple motors	Support switching among four groups of motor parameters.
	Bus communica☒on	The standard configura☒on uses the built-in Modbus-RTU,communica☒on, which can be extended to Profibus-DP、Profinet、Ethercat、CANopenbus communica☒on. Etc.
	Intelligent temperature control	Full cover system temperature tes☒ng, intelligent real-☒me IGBT chip temperature monitoring, and intelligent and op☒mized adjustment of the carrier and current based on drive temperature changes
	Type of encoders supported	Support differen☒al encoders, collector open encoders, rotary transformer encoders , and Sin-Cos Encoders
	Communica☒on linkage synchroniza☒on	Easily realize mul☒-motor synchronous transmission, and can freely choose to realize the linkage balance of mul☒-motor by current, torque or power.
	Debug window	Visual parameter debugging, fault display and waveform monitoring can be easily realized through the PC terminal etc.

Item		Specification and Technical Data
I/O Input Output Interface	Command input mode	Control keyboard input, control terminal input, bus communica☒on input, which can be switched mutually.
	Speed reference mode	Digital giving, analog voltage (current) giving, pulse giving, bus communica☒on giving and PID giving, which are mutually switched.
	Input terminal (input)	The following are standard： 5 digital input terminals (support PNP and NPN, DI5 supports 50kHz high-speed pulse input); 2 analog input terminals (support -10V ~ +10V voltage input or 0~20mA current input);
	Output terminal (output)	The following are standard:： Two digital output ports D01, DO2, DO2 supports high-speed pulse output, the highest frequency is 50kHz; 2 relay output terminals RO1, RO2; 2 analog output terminals (0V~10V voltage output or 0~20mA current output)
Display and control	Man-machine interface	Standard intelligent LCD keyboard
	Parameters duplica☒ng	Rapidly duplica☒ng parameters via the LCD control keyboard
Application environment	Applica☒on site	Indoor, free of direct sunshine, dusts, corrosive gases, flammable gases, oil mist, water vapor, drip or salts
	Al☒tude	If the al☒tude is more than 1000m, the derate is reduced by 1% for every 100m rise. If the al☒tude is more than 4000m, consult the manufacturer
	Opera☒on ambient temperature	-10℃- + 50℃, above 50℃ need to be derated (refer to the power selec☒on table)
	Rela☒ve humidity	Less than 95%RH. No droplets condensed (condensa☒on)
	Sinusoidal vibra☒on	(IEC 60068- 2/ - 6.TestFc) Max.0.1mm (5 to 13.2Hz) ; max.7m/S (13.2 to 100 Hz) sinusoidal vibra☒on (R0-R3)
	Impact	Not allowed (during opera☒on); maximum 100m/S , 11ms (during storage and transporta☒on with packing)
	Free fall (Max.)	Not allowed (during opera☒on); with packing : 100cm @R0-R1, 76cm @R2-R3
	Storage & transporta☒on temperature	-40℃ to+70℃ (-40 to+158°F)
Protection grade		IP20
Cooling mode		Forced air cooling of the interior fan. The air flows from bo☒om to top. Air-cooled radiator.
Application standard		IEC 61800-3 , IEC 61800-5-1 ; GB12668 (see the nameplate for details).
Instructions		ES610 supports SVC and space voltage vector, but doesn'tsupport FVC, 24V external power module, and posi☒on control func☒on; ES710 supports SVC, space voltage vector, FVC, 24V external power module, but does not support posi☒on control func☒on; ES710S supports SVC, space voltage vector, FVC, 24V external power module, and posi☒on control func☒on;

High Reliability

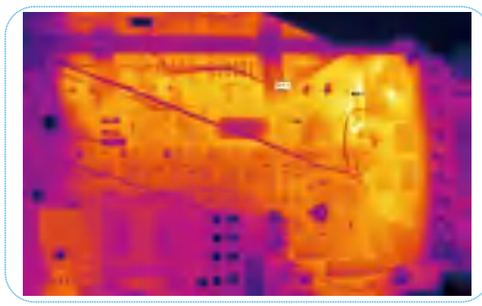
Innovative Thermal Design Philosophy and Professional Thermal Simulation Analysis

- The innovative thermal design philosophy and first-class efficient thermal simulation software bring about the innovative and unique design, which provides this product with a comprehensive and systematical heat dissipation structure and solution.
- Advanced heat test and verification technologies like thermal imaging efficiently and completely check theoretical results of the thermal design, and further guarantee thermal reliability of the product system.



Rigorous Temperature RiseTest on the Whole Converter

- Rigorous testing procedures for full load and overload verification as well as strict temperature rise acceptance standards for key componentsare adopted to enable the product to operate reliably under extreme overload conditions for a long time.
- High temperature aging testing with 120% at 40℃
- All products shall pass the loaded high temperature aging test before delivery, which can effectively prevent scattered components from being invalid, and guarantee product quality.



Spraying Process of Conformal Coatings

- Multiple high-quality conformal coatings are sprayed to enhance the product's good applicability to the environment.
- The automatic spraying process of conformal coatings is adopted to effectively ensure uniform coating thickness of the circuit board and consistency of batched products.



Note: The automatic spraying process of conformal coatings

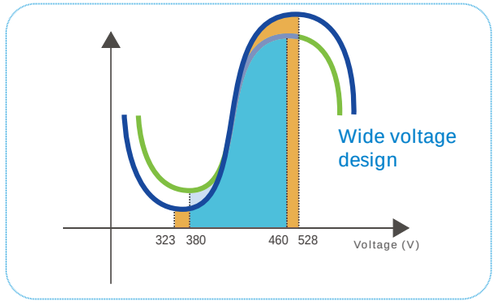
High Anti-interference Capability

- In a standard configuration, the built-in input C3 filter is equipped to reduce electromagnetic interference and guarantee steady operation of the device.
- Simple and friendly EMC cut-off point structure designs convenient for grounding and weakens electromagnetic interference.



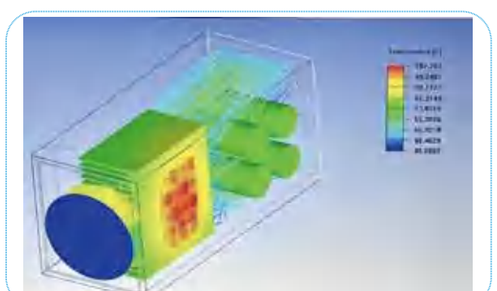
Wide Voltage Range Design

- Rated voltage: three-phase 220V/380V
- Voltage frequency:50-60Hz±5Hz
- Allowable voltage fluctuation: -15% to +15%



Innovative and Independent Air Duct Design

- The design can effectively prevent dust and other foreign matters from entering the inside of the frequency converter,thereby avoiding faults caused by electric short circuits and damaged components.
- Electronic components are separated from the main cooling system by the poor conductor or wind screen, to avoid component failuresdue to too high temperature caused by heat radiation from the main-power radiator.



Selection and Design of Key Components

- Strict component selection testing procedures are adopted.All power components such as the rectifier bridge, IGBT and electrolytic capacitor use mainstream products of the first-class manufacturers. Performance and reliability of key components are guaranteed from selection to manufacturing
- Large allowance and derating design ensures reliability of key components.

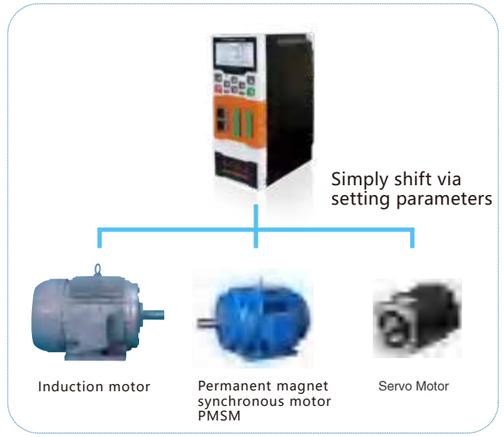
CE Certification Compliance

- The ES series products meet relevant requirements of European CE directives.

Excellent Performance

Comprehensive Motor Drive Technology

- Support drive control of all motors (three-phase asynchronous, permanent magnet synchronous, servo).
- Support the speed and torque control modes.
- The frequency converter equipped with the synchronous motor delivers good energy-saving effects.



Built-in Servo Function

- The built-in servo posi⊠oning is adopted for the device. When the PG vector control is available, the device supports control over posi⊠ons including zero servo, principal axisorienta⊠on (4 orienta⊠on posi⊠ons), simple carry control (8 carryovers se⊠ng) Pulse control, communica⊠on bus control, etc.
- Servo func⊠ons such as spindle posi⊠oning at any angle and stop at a specified angle can be realized.
- It can be used in most servo applica⊠on fields.

Accurate and Comprehensive Auto-turning Function

- The frequency converter can accomplish motor parameter auto-turning accurately, it will be more convenient to operate &commissioning and offers higher control precision and response speed.
- The comprehensive and rich Auto-turning functions cover various motor Auto-turning and mechanical Auto-turning functions.

Motor Comprehensive Auto-turning	
Rotary Auto-turning	Mostly suitable in applica⊠ons of high star⊠ng torque, high speed and high control precision.
Sta⊠c Auto-tuning	Mostly suitable in applica⊠ons of commissioning when the motor and handling machines are connected.

Rich Fieldbus Communication

- Built in RS-485
- Built-in Modbus-RTU as standard
- Support several kinds of field bus communica⊠on protocols(PROFIBUS-DP、CANopen、Profinet、EtherCAT)

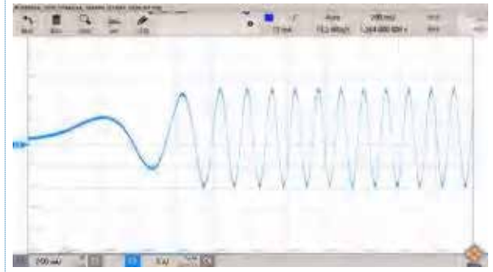




Turn complex into simple, computer monitoring software

Large Startup Torque

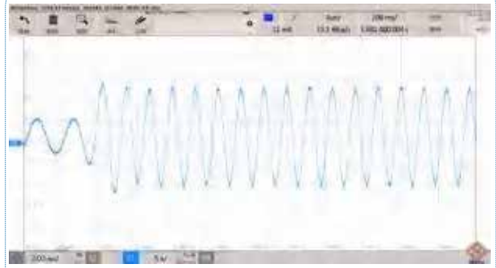
- Synchronous motor
  Open-loop vector : 0.5Hz/200%
  Close-loop vector : 0Hz/200%
- Asynchronous motor
  Open-loop vector : 0.25Hz/200%
  Close-loop vector : 0Hz/200%



1.5kW asynchronous motor 200% load fast start current waveform

Fast Torque Response, Low Torque Pulse

- Torque response open-loop vector : <20ms
- Torque response close-loop vector : <5ms
- The device can run steadily with load at a ultra-low speed of 0.01Hz. The low torque pulse ensures stable running.



Current waveform of 1.5kW asynchronous motor with 0.5Hz sudden increase of 200% load

Wide Speed Range, High Steady-speed Precision

- Speed range :
  Open-loop vector : 1 : 200
  Close-loop vector : 1 : 3000
- Steady-speed precision :
  Open-loop vector : 10% rated slip



Waveforms of different key signals when the 1.5kW asynchronous motor is suddenly loaded or unloaded with 150% load at 1500 rpm in the open-loop state (data is collected from the frequency converter and the background tool of the computer only receives data and generates waveforms)

Rich and Easy Functions

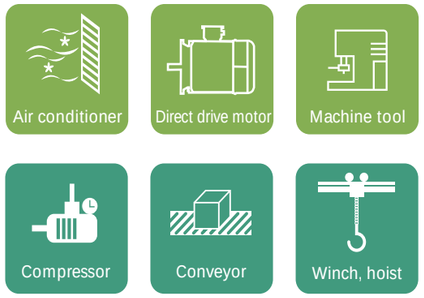
LCD Smart Keyboard Adopted in Standard Configuration

- Large text multi-language LCD display, faster and more user-friendly parameter setting
- Detailed status information display for easy monitoring and setting
- Detailed diagnostic information, you can view the status information of key points, you can view fault records and related diagnostic information, which facilitates fault query and troubleshooting.
- Implement parameter upload and download functions
- Built-in parameter change log function
- LCD keyboard can be imported externally
- Customize the parameter display interface, realize personalized data observation.
- Optional cloud link assistant multi-language intelligent LCD control keypad.



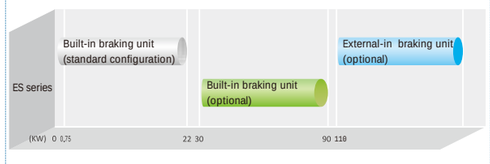
Rich Application Macros

- Various built-in typical mechanical applications such as fans, water pumps, cables and unwinding and rewinding unit.
- Automatic setting of optimum parameter values.
- With the usage selection function, users need to only select the mechanical function. Then, the device automatically sets parameters to optimum values, thereby eliminating tedious parameter setting and shortening trial run time.



Reliable Braking Function

- With magnetic flux braking function, it can brake quickly even without braking resistor.
- With DC braking function
- Standard built-in braking unit
- The use of a brake resistor achieves better braking effects, saves electric installation space, and lowers electric costs for users.



Rich Extension Functions

- Built in RS-485 communication interface.
- Support several kinds of field bus communication protocols
- Support various PG cards.

  Support collector open encoder, differential output encoder, rotary-transformer-type encoder,and sin-cos encoder.



Rich I/O Interfaces

- Type of Terminals Qty Characteristics

Digital input	5	Maximum input frequency:1kHz, compatible with NPN and PNP input types
High-speed pulse input	1	Maximum input frequency: 50kHz, compatible with NPN and PNP input types
Analog Input	2	0~20mA, -10V~ +10V
Digital output	2	Maximum output frequency: 1kHz
High-speed pulse output	1	Maximum output frequency: 50kHz
Analog output	2	0~10V, 0~20mA
Relay output	2	3A/250VAC,1A/30VDC, normally open+normally close

Systematic and Comprehensive Protection Functions

- Frequency converter protection function: short circuit protection, overcurrent protection, overvoltage protection, under-voltage protection, input & output phase loss protection, overload protection and overheat protection.
- Motor protection function: overload protection and motor temperature protection.
- Brake circuit protection function: brake transistor overload protection, brake transistor straight-through protection, and brake resistor protection

Compact Modular Design

Compact Structure Design

- Smaller size helps save installation space, facilitate electrical layout.
- Independent air duct, straight-through heat dissipation, more efficient heat dissipation capacity
- Detachable fan cover design facilitates inverter maintenance and cleaning, saving maintenance time and cost



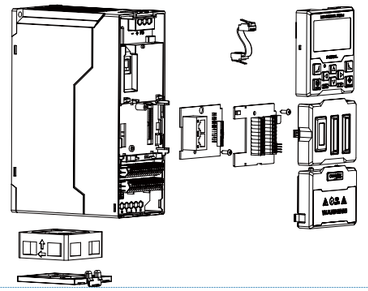
ES610/ES710/ES710S VS General model

The area is reduced by about 35 %

The volume is reduced by about 50 %

Modular Design

- The control terminals adopt spring terminals, making wiring more convenient.
- The main control unit, various PG cards and communication cards adopt the modular structure design. The joints of function modules are carefully designed and easy for universal application.
- Detachable fans, easy for cleaning and replacement.
- Hot pluggable LCD keyboard.



Smart Drive

Unique Smart Drive

- Intelligent LCD control keyboard: The friendly human-machine interface displays key parameters relevant to running of the frequency converter and motor in real time.
- Intelligent fault diagnosis: It records extreme operation conditions of the frequency converter, including the maximum current, voltage and maximum temperature, which are easy for fault locating and exception analysis. It also records device load conditions for customers, which are convenient for customers to optimize electric drive schemes.
- Intelligent temperature monitoring: It detects the temperature at key points inside the machine and intelligently controls the temperature of the whole machine by using adaptive algorithms.
- Intelligent parameter setting for industry applications: Users only need to select an industry application, and the device automatically matches optimum parameters, eliminating tedious parameter setting.

Naming Rules

ES 710 – R2 – 018.5G–3BS4 – XXXX

- Non-standard customized model
- 4: Derating is required above 40℃
  None: Derating is required above 50℃
- S: Does not meet the rated current 1.5 times overload for 1 minute
  None: Meet 1.5 times rated current o verload for 1 minute
- B : built-in brake chopper
- Voltage class :
  2 : three phase 220V
  3 : three phase 380V
- Drive product series
- Product Series
  610:
  ES610 series vector control variable frequency drive
  710:
  ES710 series high performance vector control variable frequenty drive
  710S:
  ES710S series variable frequency servo drive
- Dimensions:
  R0:first external dimension structure
  R1:second external dimension structure
  R2:third external dimension structure
  R3:fourth external dimension structure
- Rated power in general applications

0K4	···	5K5	···	018.5	···
0.4kW	···	5.5kW	···	18.5kW	···

ES610/ES710/ES710S series product selection

1）High reliability；2）High ease of use；
3）Compatible with permanent magnet synchronous and three-phase asynchronous motor drives;
4）Standard smart LCD keyboard;5）Full series of book-type designs, saving installation space
6）Innovative air duct design, full range of DC fans for heat dissipation, safe and reliable
7）Software and hardware modular design supports strong expansion capabilities
8）The whole machine has three-proof design and PCBA is sprayed with three-proof paint to ensure product stability and reliability.
9）Standard ST0 safe torque protection
10）Standard configuration of common modules such as logic operations, arithmetic operations, comparators, timers, etc., to meet the development of common functions.
11）External 24V power supply optional card, which can be used for parameter setting and communication debugging without high-voltage power.
12）Support wide voltage range input



ES610 series vector control variable frequency drive

3ph rated voltage：380~460V ± 15%

Model Code	Rated current（A）/IHd	Motor rated power（KW）/PHd	Max ambient temperature without derating	VFD overload multiple
ES610-R0-0K75G-3B	3.5	0.75	50℃	150%
ES610-R0-1K5G-3B	4.5	1.5	50℃	150%
ES610-R0-2K2G-3B	6.5	2.2	50℃	150%
ES610-R0-4K0G-3B	10	4	50℃	150%
ES610-R0-5K5G-3BS	12.6	5.5	50℃	120%
ES610-R1-5K5G-3B	15	5.5	50℃	150%
ES610-R1-7K5G-3BS	17	7.5	50℃	140%
ES610-R1-7K5G-3B4	17	7.5	40℃	150%
ES610-R1-7K5G-3B	18.5	7.5	50℃	150%
ES610-R1-011G-3BS	25	11	50℃	120%
ES610-R1-011G-3B4	25	11	40℃	140%
ES610-R2-011G-3B	25	11	50℃	150%
ES610-R2-015G-3BS4	32	15	40℃	120%
ES610-R2-015G-3B	32	15	50℃	150%
ES610-R2-018.5G-3BS4	37	18.5	40℃	120%
ES610-R3-018.5G-3B	39	18.5	50℃	150%
ES610-R3-022G-3B	45	22	50℃	150%
ES610-R3-030G-3B4	61	30	40℃	150%
ES610-R3-030G-3B	61	30	50℃	150%
ES610-R3-037G-3B4	75	37	40℃	150%

Note：
1、All models are equipped with ST0 safe torque function as standard and built-in braking unit as standard.
2、All models default configured with multi-language display LCD keypad.
3、Does not support external DC24V control power supply.
4、Except for some marked models, there is no derating when the ambient temperature is 50℃.
5、Except for some models whose overload capacity is 120% rated load for 1 minute, most models can be applied to heavy overload application scenarios of 150% and 140% rated load for 1 minute.
6、Supports scalar control, speed sensorless open-loop vector, asynchronous and permanent magnet synchronous motor drive, and does not support high-precision speed sensor closed-loop vector control.

3ph rated voltage：208~240V ± 15%

Model Code	Rated current（A）/IHd	Motor rated power（KW）/PHd	Max ambient temperature without derating	VFD overload multiple
ES610-R0-0K4G-2B	3.5	0.37	50℃	150%
ES610-R0-0K7G-2B	4.5	0.75	50℃	150%
ES610-R0-1K5G-2B	6.5	1.5	50℃	150%
ES610-R0-2K2G-2B	10	2	50℃	150%
ES610-R1-4K0G-2B	18.5	4.0	50℃	150%
ES610-R2-5K5G-2B	25	5	50℃	150%
ES610-R2-7K5G-2B	32	7.5	50℃	150%
ES610-R3-011G-2B	45	11	50℃	150%
ES610-R3-015G-2B4	61	15	40℃	150%
ES610-R3-015G-2B	61	15	50℃	150%
ES610-R3-018.5G-2B4	75	18.5	40℃	150%

Note：
1、All models are equipped with ST0 safe torque function as standard.
2、All models come standard with built-in braking units.
3、All models default configured with multi-language display LCD keypad.
4、Does not support external DC24V control power supply.
5、Except for some marked models, there is no derating when the ambient temperature is 50℃.
6、Supports scalar control, speed sensorless open-loop vector, asynchronous and permanent magnet synchronous motor drive, and supports high-precision speed sensor closed-loop vector control.

ES710 series high performance vector control variable frequency drive

3ph rated voltage：380~460V ± 15%

Model Code	Rated current（A）/IHd	Motor rated power（KW）/PHd	Max ambient temperature without derating	VFD overload multiple
ES710-R0-0K75G-3B	3.5	0.75	50℃	150%
ES710-R0-1K5G-3B	4.5	1.5	50℃	150%
ES710-R0-2K2G-3B	6.5	2.2	50℃	150%
ES710-R0-4K0G-3B	10	4	50℃	150%
ES710-R0-5K5G-3BS	12.6	5.5	50℃	120%
ES710-R1-5K5G-3B	15	5.5	50℃	150%
ES710-R1-7K5G-3BS	17	7.5	50℃	140%
ES710-R1-7K5G-3B4	17	7.5	40℃	150%
ES710-R1-7K5G-3B	18.5	7.5	50℃	150%
ES710-R1-011G-3BS	25	11	50℃	120%
ES710-R1-011G-3B4	25	11	40℃	140%
ES710-R2-011G-3B	25	11	50℃	150%
ES710-R2-015G-3BS4	32	15	40℃	120%
ES710-R2-015G-3B	32	15	50℃	150%
ES710-R2-018.5G-3BS4	37	18.5	40℃	120%
ES710-R3-018.5G-3B	39	18.5	50℃	150%
ES710-R3-022G-3B	45	22	50℃	150%
ES710-R3-030G-3B4	61	30	40℃	150%
ES710-R3-030G-3B	61	30	50℃	150%
ES710-R3-037G-3B4	75	37	40℃	150%

Remark:
1、All models are equipped with ST0 safe torque function as standard.
2、All models come standard with built-in braking units.
3、All models default configured with multi-language display LCD keypad.
4、Supports external DC24V control power supply (built-in optional).
5、Except for some marked models, there is no derating when the ambient temperature is 50℃.
6、Except for some models whose overload capacity is 120% rated load for 1 minute, most models can be applied to heavy overload application scenarios of 150% and 140% rated load for 1 minute.
7、Supports scalar control, speed sensorless open-loop vector, asynchronous and permanent magnet synchronous motor drive, and supports high-precision speed sensor closed-loop vector control.

3ph rated voltage：208~240V ± 15%

Model Code	Rated current（A）/IHd	Motor rated power（KW）/PHd	Max ambient temperature without derating	VFD overload multiple
ES710-R0-0K4G-2B	3.5	0.37	50℃	150%
ES710-R0-0K7G-2B	4.5	0.75	50℃	150%
ES710-R0-1K5G-2B	6.5	1.5	50℃	150%
ES710-R0-2K2G-2B	10	2	50℃	150%
ES710-R1-4K0G-2B	18.5	4.0	50℃	150%
ES710-R2-5K5G-2B	25	5	50℃	150%
ES710-R2-7K5G-2B	32	7.5	50℃	150%
ES710-R3-011G-2B	45	11	50℃	150%
ES710-R3-015G-2B4	61	15	40℃	150%
ES710-R3-015G-2B	61	15	50℃	150%
ES710-R3-018.5G-2B4	75	18.5	40℃	150%

Note：
1、All models are equipped with ST0 safe torque function as standard.
2、All models come standard with built-in braking units.
3、All models default configured with multi-language display LCD keypad.
4、Supports external DC24V control power supply (built-in optional).
5、Except for some marked models, there is no derating when the ambient temperature is 50℃.
6、Supports scalar control, speed sensorless open-loop vector, asynchronous and permanent magnet synchronous motor drive, and supports high-precision speed sensor closed-loop vector control.

Heavy load application: IHd is the continuous rated output current of G-type machine when the ambient temperature is <=40℃ or 50℃. Its overload current value is allowed to reach 150%, 140 or 120% of IHd every 10 minutes (refer to the specific overload coefficient Power Selection Chart), in other cases the length of time depends on the temperature of the drive. PHd = Typical motor power for heavy duty applications.

● Derating

If any of the following conditions exist, the above-mentioned continuous output current must be reduced (this process needs to be considered during the selection and design. At the same time, during operation, the internal intelligent control calculation will be used to automatically optimize the reduction while ensuring that the driver provides the maximum output. Allow):
Single-phase or three-phase 220V is 0 to 2000m, three-phase 380V is 0 to 4000m, and the altitude is derated by 1% for every 100m above 1000m. For applications where the altitude exceeds 4000m, please consult the manufacturer.

ES710S series variable frequency servo drive

3ph rated voltage：380~460V ± 15%

Model Code	Rated current（A）/IHd	Motor rated power（KW）/PHd	Max ambient temperature without derating	VFD overload multiple
ES710S-R0-0K75G-3B	3.5	0.75	50℃	150%
ES710S-R0-1K5G-3B	4.5	1.5	50℃	150%
ES710S-R0-2K2G-3B	6.5	2.2	50℃	150%
ES710S-R0-4K0G-3B	10	4	50℃	150%
ES710S-R0-5K5G-3BS	12.6	5.5	50℃	120%
ES710S-R1-5K5G-3B	15	5.5	50℃	150%
ES710S-R1-7K5G-3BS	17	7.5	50℃	140%
ES710S-R1-7K5G-3B4	17	7.5	40℃	150%
ES710S-R1-7K5G-3B	18.5	7.5	50℃	150%
ES710S-R1-011G-3BS	25	11	50℃	120%
ES710S-R1-011G-3B4	25	11	40℃	140%
ES710S-R2-011G-3B	25	11	50℃	150%
ES710S-R2-015G-3BS4	32	15	40℃	120%
ES710S-R2-015G-3B	32	15	50℃	150%
ES710S-R2-018.5G-3BS4	37	18.5	40℃	120%
ES710S-R3-018.5G-3B	39	18.5	50℃	150%
ES710S-R3-022G-3B	45	22	50℃	150%
ES710S-R3-030G-3B4	61	30	40℃	150%
ES710S-R3-030G-3B	61	30	50℃	150%
ES710S-R3-037G-3B4	75	37	40℃	150%

Note：
1、All models are equipped with ST0 safe torque function as standard.
2、All models come standard with built-in braking units.
3、All models default configured with multi-language display LCD keypad.
4、Supports external DC24V control power supply (built-in optional).
5、Except for some marked models, there is no derating when the ambient temperature is 50℃.
6、Except for some models whose overload capacity is 120% rated load for 1 minute, most models can be applied to heavy overload application scenarios of 150% and 140% rated load for 1 minute.
7、Supports speed sensorless open-loop vector, asynchronous and permanent magnet synchronous motor drives, supports high-precision speed sensor closed-loop vector control, and supports servo position control.



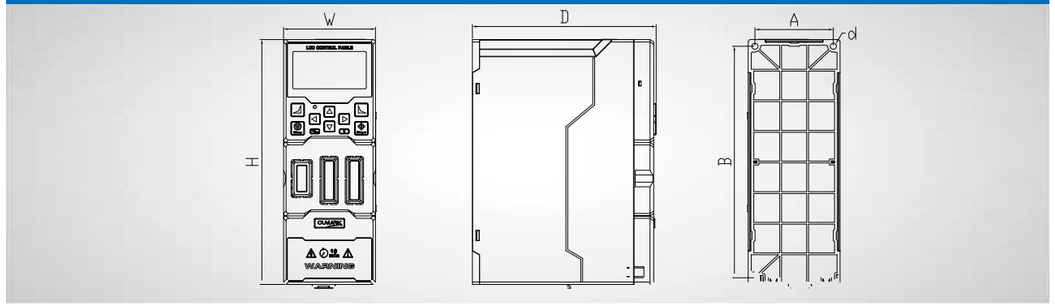


Installation Dimension

Dimension	Installation Hole Width Spacing A (mm)	Installation Hole Height Spacing B (mm)	Installation Hole Sized (mm)	Appearance Width W (mm)	Appearance Height H (mm)	Appearance Thickness D (mm)	Weight (Kg)
R0	64	189	5.0	75	200	150	2
R1	90	230	5.0	100	240	169	3
R2	99.5	322	6.0	115	333	179	4.8
R3	124	371	6.0	140	381.5	218	8

Note:1) Indicates the spacing between book-type forward mounting holes and the spacing between chip-type lateral mounting holes (the preferred design method);

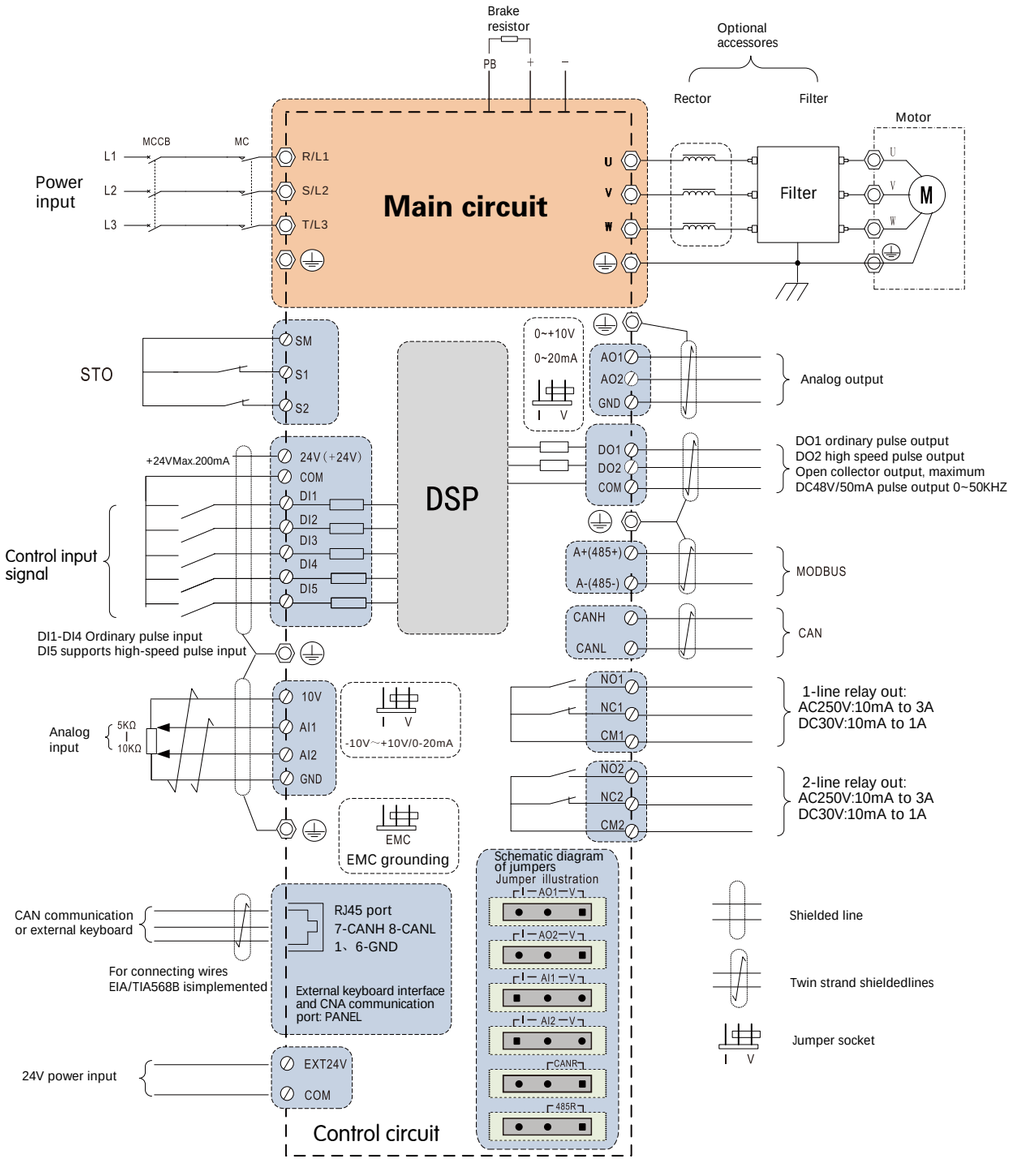
ES610/ES710/ES710S series appearance and wall-mounted installation dimensions diagram



Optional Accessories

Legend	Model	Accessory and Main Function
	ES710-CM-PD	ES610/ES710/ES710S Profbus-DP communication card
	ES710-CM-PN	ES610/ES710/ES710S profinet communication, card
	ES710-CM-ET	ES610/ES710/ES710S EtherCAT communication card
	ES710-PG-OC	ES710/ES710S Open collector encoder interface card
	ES710-PG-DF1	ES710/ES710S Differential encoder interface card, supports 5V/12V
	ES710-PG-DF2-OC	ES710/ES710S Differential square wave encoder interface card with frequency division output
	ES710-PG-RT	ES710/ES710S Rotary transformer encoder interface card
	ES710-PG-SN	ES710/ES710S Sin-cos encoder interface card
	ES710-PG-SN1	ES710/ES710S high-resolution Sin-cos encoder interface card
	ES710-CM-CAN	ES610/ES710 Canopen communication card
	ES710-RU-DTC	ES610/ES710 Grid voltage acquisition card
	ES710-PG-DC24V-POW	ES710/ES710S External DC24V power input board (built-in optional)
	ES710-R0	ES610/ES710/ES710S Remote cover
	ES710-CP-SU	ES610/ES710/ES710S Keyboard extension bracket
	ES710-CP-MU	ES610/ES710/ES710S Multi-language intelligent LCD control panel
	ES710-CP-CU	ES610/ES710/ES710S Cloud link assistant multi-language intelligent LCD control panel
	8-core 2-meter connecting cable	External control panel cable
	8-core 3-meter connecting cable	External control panel cable
	8-core 5-meter connecting cable	External control panel cable
	ES-RP-01	Potentiometer
	8-core 45mm connecting cable	ES610/ES710/ES710S control panel cable
	PC Debug software	After installing this software, visual parameter debugging, fault display, waveform detection, etc. can be easily realized through the PC terminal.

Standard Wiring Diagram (Applicable to ES610/ES710/ES710S)



*ES610 does not support FVC vector control, ST0 nor external DC24V power supply functions

Advantageous Industry Applications

Lifting Machinery

- Fast response speed and large startup torque properly alleviate vibrations at startup.
- Zero-speed clasp brake and zero-speed open brake completely eliminate hook sliding and back flush.
- Low torque pulse ensures more reliable operation of the device; especially in construction elevators, the device makes taking the elevators more conformable.
- All-round protection functions (frequency converter, motor, brake unit) and overload torque detection function prevent operations beyond the specification or on a mechanical failure.
- Book structure design, with built-in braking unit as standard.
- The Smart drive function facilitates operations (easy for commissioning and maintenance), and helps save labor costs and time.
- Intelligent LCD keyboard, real-time monitoring of key information, convenient man-machine interactions are provided.
- The voltage operation range is wide (-15% to +15%).

Typical Applications



Bridge crane



Tower crane



Hoist

Metal and Stone Processing

- Low frequency and strong torque, steady speed and high precision.
- The device can decelerate quickly to stop during a power failure to prevent long-time mechanical inertia rotation, which is safer.
- High overload capacity (1 S seconds at 200% rated load), good overvoltage suppression (especially in punching).
- High protection grade (IP40), closed circuit structure design, thickening process of multiple conformal coatings, good physical environmental adaptability
- Smartdrive function, which can be used in most servo applications.
- Smart drive function, which facilitates operations (easy for commissioning and maintenance), and save labor costs and time.
- Intelligent LCD keyboard, real-time monitoring of key information, convenient man-machine interactions
- The fluctuation of speed is small when the converter is loaded suddenly.
- Capable of receiving various signal sources

Typical Applications



Machine tools



Rotary cutter for the wood processing equipment



Punch of the metal processing equipment

Cables, Winding

- Low frequency and strong torque, supporting low-speed startup with empty reel or full reels
- Fast response speed, steady and fast during startup/stop and acceleration and deceleration
- High stead-speed precision, constant tension control, steadier pendulum during the whole process
- High protection grade (IP40), closed circuit structure design, and thickening process of multiple conformal coatings, effectively preventing metal dusts
- F3 models and above, which can effectively reduce power higher harmonic and conduction radiation.Other optional accessories are not required to save space and reduce wiring
- Smartdrive function, avoiding complex commissioning, facilitating maintenance; saving labor costs and time
- Intelligent LCD keyboard, real-time monitoring of key information, convenient man-machine interactions

Typical Applications



Coating machine



Straight wiredrawing machine

Fluid Machinery

- Intelligent commissioning: Intelligent setting of industry application parameters, intelligent V/F curve setting. Complex commissioning by professionals is not required to save labor and time.
- Compatible with synchronous motors

  energy greatly Used with synchronous motor, down sizing and light weight, saving

  Used with synchronous motor, down sizing and light weight, saving equipment room
- equipment room Built-in reactor for F3 and above models

  Other optional accessories are not required to save space and reduce wiring; The power higher harmonic and conduction and radiation can be effectively reduced.
- Good human-machine interface

  Real-time monitoring of key parameters; real-time and multi-line LCD display
- Speed search function: Rotations in the free running mode can be searched after power failure and startup, implementing easy start up.
- Greater energy saving effects, minimum unit power consumption in the case of equivalent torques

Typical Applications



Air compressor



Fans & pumps



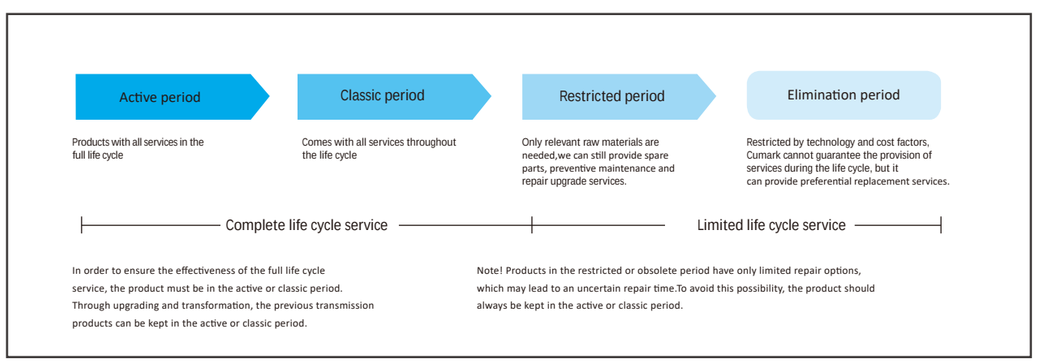
High Speed Maglev Blower

Summary of various services

The Cumark technical service teams across China, together with Cumak authorized service partners, provide you with a full range of pre-sales and after-sales technical services. Your success is our goal. Cumark will tailor a full lifecycle management solution for you to escort your business growth.



Cumark product life cycle management mode



Note