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EXCELLENT & SMART

Creat a better life with smart drive

CUMARK

SHENZHEN CUMARK SCI. & TECH. CO., LTD.

Cumark Building, 68 Guangdian East Road, Guangming District Shenzhen,China
Postalcode：518107
Tel：0755-81785111
Fax：0755-81785108
Website：www.cumark.com.cn

Official Website WeChat Public Platform Alibaba Store

CUMARK

ES Series

General Purpose Type Vector Control Low-voltage Frequency Converter

ES560，5.5至630kW

High reliability/ Superior Quality / Made in China

Low Voltage inverter series | High Voltage inverter series | Explosion-proof inverter | System solution provider

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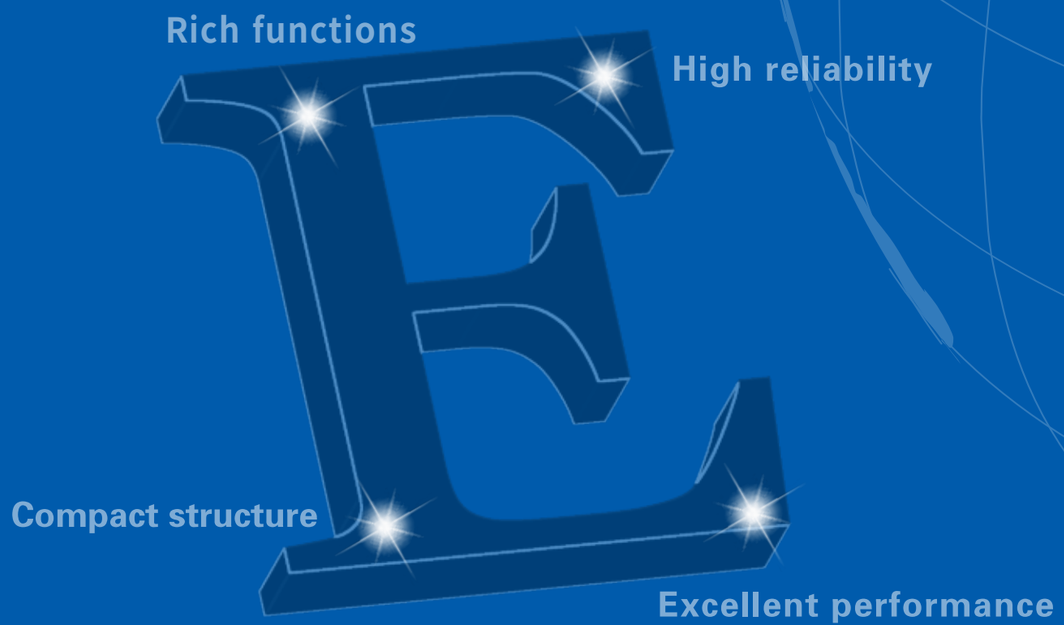
ES series inverter

Excellent & Efficient
Intelligence Drives the Future



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.

Domestic Service Outlets

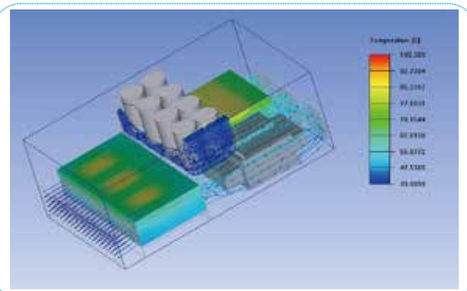
List of ES560 Frequency Inverter

Type	Performance	Target market	Series	Appearance
General purpose type	1) High reliability 2) Easy operation 3) Open-loop control & vector control 4) Compatible permanent magnet synchronization & 3phase asynchronous motor 5) Built in digital LED keyboard, optional Intelligent LCD display 6) Modular compact structure design	Ceramic equipment ; Dyeing & finishing equipment ; Woodworking machinery ; Glass mechanical ; Logistic & warehousing ; Extrusion equipment ; Food machinery ; Textile machinery ; Rubber machine ; Conveyor ; Centrifuge ; Compressor ; Fan ; Pump ; etc.	ES560 (Synchronous) ES560 L (Asynchronous, Synchronous) 380V 3PH 5.5~630KW	

High Reliability/ES Series Frequency Converter

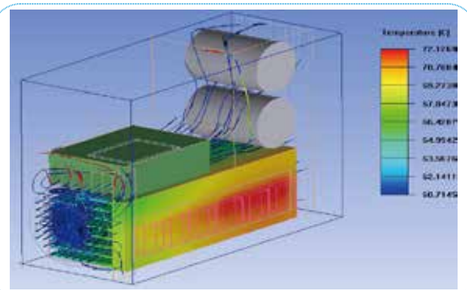
Innovative and Independent Air DuctDesign

- 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 failures due to too high temperature caused by heat radiation from the main-power radiator.



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 Rise Test on the Whole Converter

- Rigorous testing procedures for full load and overload verification as well as strict temperature rise acceptance standards for key components are adopted to enable the product to operate reliably under extreme overload conditions for a long time.
- High temperature aging testing with 120%(G)/100% （P） 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.

Three-proofing lacquer spraying process

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

Note: The automatic spraying line of three-proofing lacquer

High Protection Grade

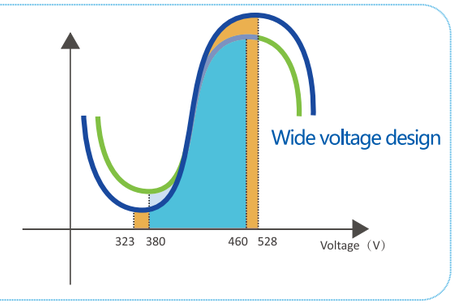
- Especially applied in cables, machine tools, ceramics and textiles industries where the site environments are severe, humid or dusty. The innovative and tightly closed structure design can effectively reduce influence of such environments.
- The protection class can reach IP40(5.5-22KW).

High Anti-interference Capability

- In a standard configuration, the optimally designed built-in DC reactor (F3 and above model) can effectively reduce interference from higher harmonic and foreign conduction radiation and strengthen the power grid adaptability.
- 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 phase380V
- Voltage frequency： 50-60Hz±5Hz
- Allowable voltage fluctuation： -15% to +15%



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 /ES Series Frequency Converter

Comprehensive Motor Drive Technology

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

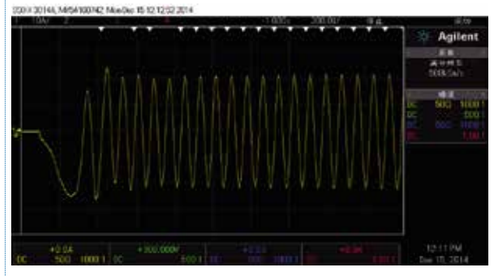
Accurate and Comprehensive Auto-turning Function

- 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 applications of high starting torque, high speed and high control precision.
Static Auto-tuning	Mostly suitable in applications of commissioning when the motor and handling machines are connected.

Large Start-up Torque

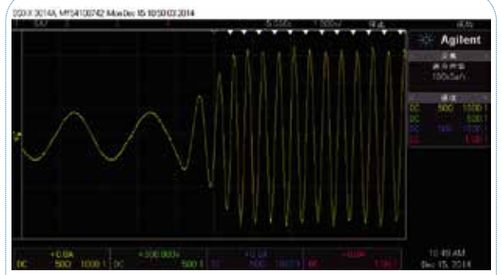
- Synchronous motor
  Open-loop vector: 0.5Hz/150%
- Asynchronous motor
  Open-loop vector: 0.25Hz/150%



FAST STARTUP CURRENT WAVEFORMS OF 4 KW SYNCHRONOUS MOTOR AT 150% LOAD

Fast Torque Response, Low Torque Pulse

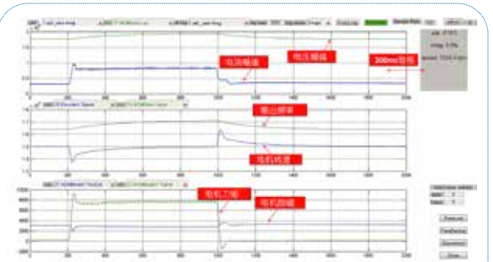
- TORQUE RESPONSE OPEN-LOOP VECTOR : <20MS



CURRENT WAVEFORMS OF 4KW ASYNCHRONOUS MOTOR WITH 0.5HZ AT 150% LOAD SUDDENLY

Wide Speed Range, High Steady-speed Precision

- SPEED RANGE :
  OPEN-LOOP VECTOR: 1 : 200
- STEADY-SPEED PRECISION:10% RATED SLIP



WAVEFORMS OF DIFFERENT KEY SIGNALS WHEN THE 5.5KW 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 RECEIVESDATA AND GENERATES WAVEFORMS)

High Overload Capacity

- RUN STEADILY AT 120% RATED LOAD
- RUN FOR 60S AT 150% RATED LOAD

Comprehensive motor control mode

- BUILT-IN SCALAR CONTROL AND VECTOR CONTROL MODE

Enhanced V/F curve

- SUPPORT MULTIPLE V/F CURVES AND COMPLETE V/F SEPARATION CONTROL

Rich and Easy Functions /ES Series Frequency Converter

LCD Smart Keyboard Adopted inStandard Configuration/optional LED keypad

- Storage of application parameters of up to 4 user groups, which is convenient for fast process switching.
- Built-in parameter change logging function.
- Detailed status display for monitoring and setting.
- Support external keyboard.
- When the smart LCD keyboard is selected, the parameters can be quickly copied and copied.

Rich I/O Interfaces

- Type of Terminals Qty Characteristics

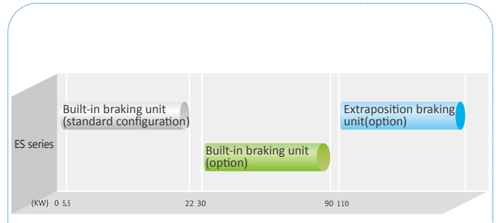
Boolean input	7	Maximum input frequency:1kHz, compatible with NPN and PNP input types
High-speed pulse input	1	Maximum input frequency: 50kHz, compatible with NPN and PNP input types
Analog Input	3	0~10V, 0~20mA, -10V to +10V (Optional)
Boolean output	2	Maximum output frequency: 1kHz
High-speed pulse output Analog output	1	Maximum output frequency: 50kHz
Relay output	2	0~10V, 0~20mA
	2	3A/250VAC,1A/30VDC, normally open+normally close

Rich Extension Functions

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

Reliable Braking Function

- Over-excitation braking function achieves emergency braking
- Support DC braking
- The built-in braking unit is optional for the device with power of 30-90KW.
  The built-in braking unit is included in the standard configuration of the device with power of 22 KW and below.
- The use of a brake resistor achieves better braking effects, saves electric installation space, and lowers electric costs for users.

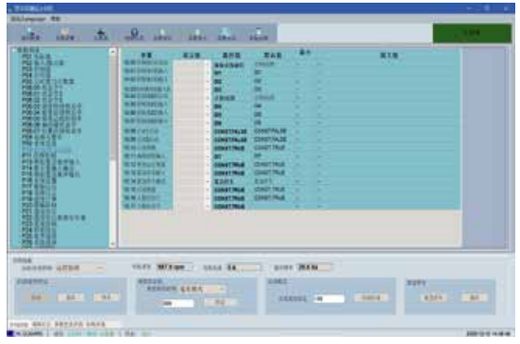


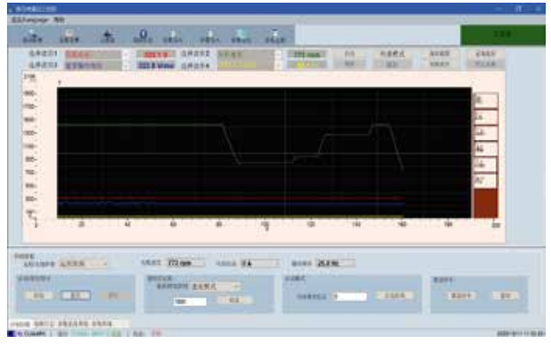
Systematic and Comprehensive Protection Functions

- 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

Turn complex into simple, computer monitoring software

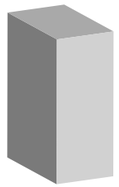
- Use RS485 serial port to connect to computer
- Chinese and English can switch languages
- Support batch upload and download of parameters
- Support parameter query, comparison, modification, import and export
- Supports online debugging of drives start and stop, forward and reverse, emergency stop, control switch, mode switch, etc.
- Possess powerful oscilloscope function to realize the acquisition and analysis of real-time waveform data of the drives





Compact Structure Design

- Smaller size, saving installation space, convenient for electrical layout, and more suitable for combination with synchronous motors.
- Builting-in DC reactor (F3 and above models) reduces electrical installation space; at the same time, it eliminates the potential safety hazards of external DC reactor.
- The design of the metal plate on the back of the low-power model can effectively prevent the influence of the installation environment such as oil pollution on the inverter and ensure a firm installation.
- The regular window cleaning/differential design of the back radiator of the medium and high power models allows the frequency converter to be regularly maintained and cleaned, saving maintenance time and cost.
- Some models of medium& high power support lateral blade installation, which greatly facilitates the complete design and manufacture of professional systems.

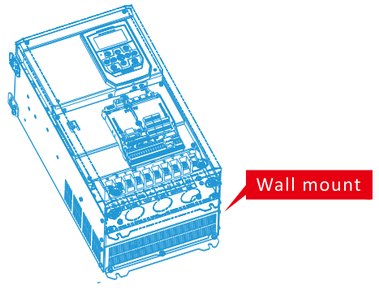


ES560 series VS Peer General

Area reduced by 30% volume reduced by 45%

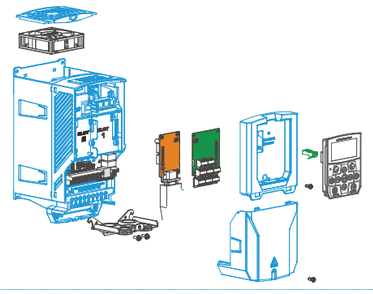
Multiple installation modes

- F1~B5: Wall mount.
- B6~B9: Wall installation, optional floor installation.



Modular design

- Removable terminal block, easier to replace and maintain.
- The main control unit, various PG cards, and communication cards adopt a modular structure design, and the connection of each functional module is carefully designed and easy to use.
- Removable fan, easy to clean and replace.
- Hot-pluggable LCD/ED keyboard.



Smart Drive Unique Smart Drive

- Smaller size, saviIntelligent LCD control keyboard: Good human-computer interaction interface, real-time display of key parameters of the inverter and motors.
- Intelligent fault diagnosis:
  Record the extreme operating conditions of the inverter, such as the maximum current, voltage, and maximum temperature, to facilitate fault finding and abnormal analysis; it can also record the customer's load conditions, which is convenient for customers to worry about electric drive schemes.
- Intelligent temperature monitoring:Can detect temperature detection of key points inside the inverter, and with an adaptive algorithm which can control the temperature of the whole machine more intelligently.
- Manual V/F curve setting: Users can set the manual V/F curve setting mode according to their needs.
- Intelligent V/F curve:Automatically match the optimal performance parameters according to the parameters of the motor, without manual setting
- Intelligent industry application parameter setting:Just select the industry application macro, you can automatically match the most suitable parameters without cumbersome parameter settings

Smart Drive Unique Smart Drive

ES XXX - XX - XXXG/XXXP - 3B - XXXXXY

- ES: Transmission product series
- XXX: Product Series
  - 560 Universal Type
  - 560L Open loop permanent magnet synchronous motor drive controller
- XX: Shape volume
  - 01 The first external dimension structure
  - 02 The second external dimension structure
  - ……And so on
- XXXG/XXXP: General application rated power

Rated power for heavy-duty applications					
5K5	…	018	…	160	…
5.5kW	…	18.5kW	…	160kW	…

- 3: Voltage level
  3: Three-phase 380v
- B: Built-in braking unit
  /B: Builting-in brake unit is optional
  None: without built-in braking uni
- XXXXXY: Non-standard customized model

Technical Data

Item		Specification and Technical Data
Item	Input voltage U1	380V...500V three phase
	Input frequency f1	50...60Hz ±5%
	Output voltage U2	0...U1 (V) (The maximum output voltage equals the input power voltage.)
	Output frequency f2	0-1000Hz
	Carrier frequency	2-8 KHz (The device can intelligently and automatically make optimal adjustment according to load characteristics and drive temperature.) Consult factory for higher carrier frequency.
	Input voltage unbalance degree	Maximum: ±3% of rated inter-phase input voltage
	Efficiency	≈98% (when operating at rated power)
	Resolution of given speed	Digital setting: 1 RPM / 0.01Hz Analog setting: 0.025% of maximum RPM
	Control Mode	Open loop vector control, scalar control
Basic functions	Startup Torque	Open loop vector control： 150% 0.5Hz
	Speed Adjustment Range	1 : 200 @ Open loop vector control
	Overload capacity	Heavy load application: 60s at 150% rated current @40°C.The time depends on the drive temperature under other conditions. Light load application: 60s at 120% rated current @40°C. The time depends on the drivetemperature under other conditions.
	Torque boost	Manual torque boost 1%-10%
	V/F curve	Intelligent adaptive
	V/ F Separation	Completely separated
	Acceleration and Deceleration curves	straight-line or S-curve acceleration and deceleration mode
		Two acceleration time values. The acceleration and deceleration time range : 0.0s-650.00s
	Simple PLC function	Achieve operationof up-to-16-stages speed (via built-in PLC or control terminals)
	Built-in PID	Conveniently achieve the process control close-loop control system
	Automatic voltage	When the grid voltage changes, the device automatically maintains constant output voltage.
	Overvoltage and overcurrent stall control	The current and voltage are automatically limited during running to avoid jump faults due to frequent overcurrent and overvoltage
	Protection function	Output shortcircuit protection, input & output phase loss protection, overcurrent protection, overvoltage protection,undervoltage protection, overheat protection, overload protection, brake chopper overload protection, brake chopper shortcircuit protection, brake resistor overload protection
	Non-stop during transient interruption	When a short-term power failure occurs in the power grid, the drive will run at a reduced speed. After the power grid is on, the drive will back to normal working status..
	Timing control	Timing control function. The time range and precision is 0.0-6500.0(min).
	Power failure	In the case of unexpected power failure, the inverter can be guaranteed to stop steadily
	Communication Bus	Standard built-in Modbus, can be extended to CANopen, Profibus-DP, Profinet, EtherCAT bus communication

Technical Data

Item		Specification and Technical Data
I/O Input Output Interface	Command input mode	Control keyboard input, control terminal input, bus communication input, which can be switched mutually.
	Speed reference mode	Digital giving, analog voltage (current) giving, pulse giving, bus communication giving and PID giving, which are mutually switched.
	Input terminals	The followings are included in standard configuration： 7 digital input terminals, where DI7 supports the maximum of 50 kHz high-speed pulse input. 3 analog input terminals (where, at least 2 supports 0-10V voltage or 0-20mA).
	Output terminals	The followings are included in standard configuration： 1 high-speed pulse output terminal (supporting 0-50 kHZ square signal output); 2 digital output terminals; 2 relays output terminals; 2 analog output terminals (supporting0~10V output or 0~20mA).
Display	Man-machine interface	Removable LED keypad as standard configuration, LCD keypad is optional.
	Parameters Duplication	Rapidly duplicating parameters via the LCD control keyboard
Application environment	Application site	Indoor, free of direct sunshine, dusts, corrosive gases, flammable gases, oil mist,
	Altitude	When the altitude is 0~1000m or 1000~4000m, the capacity is reduced by 1% as the altitude rises by 100m. (consult professionals for more accurate values)
	Operation ambient temperature	-10℃ to+40℃ (when the ambient temperature is 40℃-55℃, the drive is automatically derated to achieve self-protection)
	Relative humidity	Less than 95%RH. No droplets condensed (condensation)
	Sinusoidal vibration	(IEC 60068- 2/ - 6.TestFc) Max.0.1mm (5 to 13.2Hz) ; max.7m/S 2 (13.2 to 100 Hz) sinusoidal vibration (F1-B7) Max.0.1mm (10 to 57Hz) ; max.l0m/S2 (57 to 150 Hz) sinusoidal vibration (B8-B9)
	Impact	Not allowed (during operation); maximum 100m/S 2 , 11ms (during storage and transportation with packing)
	Free fall (Max.)	Not allowed (during operation); with packing : 100cm@F1,F2,F2A ; 76cm @F3,B4, 46cm@B8-B9
	Storage & transportation temperature	–40℃to+70℃ (-40to+158°F)
Protection grade		Electrical cavity full closed design for small- and medium-power models,
Cooling mode		Forced air cooling of the interior fan. The air flows from bottom to top. Air-cooled radiator.
Application standard		IEC 61800-3(2004);IEC 61800-5-1(2007);GB 12668

Selection of ES560 Products

380V 3ph rated voltage(adapt to the working voltage range 380~460V ±15%)

Model Code	Rated Value		Heavy Load Application		Noise Level	Heat Radiation	Air Volume	Shell code
	ILd(A)	PLd(kW)	IHd(A)	PHd(kW)	dBA	W	m³/h	
ES560-01-5K5G/7K5P-3B	17.5	7.5	14.5	5.5	55	210	130	F1
ES560-02-7K5G/011P-3B	25	11	17.6	7.5	55	325	130	F2
ES560-02-011G-3B	/	/	25	11	55	420	130	
ES560-02A-011G/015P-3B	35	15	25	11	52	470	175	F2A
ES560-02A-015G/018P-3B	38.6	18.5	35	15	52	550	175	
ES560-03-018G/022P-3B	46	22	41	18.5	57	660	306	F3
ES560-03-022G/030P-3B	61	30	48	22	57	890	306	
ES560-04-030G/037P-3/B	75	37	66	30	60	1114	610	B4
ES560-04-037G/045P-3/B	91	45	79	37	60	1140	610	
ES560-04-045G/055P-3/B	115	55	94	45	60	1200	610	
ES560-05-055G/075P-3/B	155	75	116	55	60	1440	610	B5
ES560-05-075G/090P-3/B	178	90	160	75	60	1940	610	
ES560-05-090G/110P-3/B	215	115	179	90	68	2200	850	
ES560-06-110G/132P-3	261	132	215	110	68	3300	1275	B6
ES560-06-132G/160P-3	310	160	259	132	68	3850	1275	
ES560-07-160G/200P-3	387	200	314	160	75	4100	1800	B7
ES560-07-200G/220P-3	427	220	387	200	75	4600	1800	
ES560-07-220G/250P-3	450	250	427	220	75	5100	1800	
ES560-08-250G/280P-3	525	280	481	250	72	5782	2190	B8
ES560-08-280G/315P-3	600	315	550	280	72	6252	2190	
ES560-08-315G/355P-3	660	355	616	315	72	7866	2190	
ES560-09-355G/400P-3	720	400	650	355	75	9100	2700	B9
ES560-09-400G/450P-3	810	450	720	400	75	9900	2700	
ES560-09-450G/500P-3	870	500	810	450	75	10500	2700	
ES560-09-500G/560P-3	980	560	870	500	75	11500	2700	
ES560-09-560G/630P-3	1060	630	980	560	75	12600	2700	

Note: Rated power is measured under rated voltage 380V

Selection of ES560L Products

380V 3ph rated voltage(adapt to the working voltage range 380~460V ±15%)

Model Code	Rated Value		Heavy Load Application		Noise Level	Heat Radiation	Air Volume	Shell code
	ILd(A)	PLd(kW)	IHd(A)	PHd(kW)	dBA	W	m³/h	
ES560L-01-5K5G/7K5P-3B	17.5	7.5	14.5	5.5	55	210	130	F1
ES560L-02-7K5G/011P-3B	25	11	17.6	7.5	55	325	130	F2
ES560L-02-011G-3B	/	/	25	11	55	420	130	
ES560L-02A-011G/015P-3B	35	15	25	11	52	470	175	F2A
ES560L-02A-015G/018P-3B	38.6	18.5	35	15	52	550	175	
ES560L-03-018G/022P-3B	46	22	41	18.5	57	660	306	F3
ES560L-03-022G/030P-3B	61	30	48	22	57	890	306	
ES560L-04-030G/037P-3/B	75	37	66	30	60	1114	610	B4
ES560L-04-037G/045P-3/B	91	45	79	37	60	1140	610	
ES560L-04-045G/055P-3/B	115	55	94	45	60	1200	610	
ES560L-05-055G/075P-3/B	155	75	116	55	60	1440	610	B5
ES560L-05-075G/090P-3/B	178	90	160	75	60	1940	610	
ES560L-05-090G/110P-3/B	215	115	179	90	68	2200	850	
ES560L-06-110G/132P-3	261	132	215	110	68	3300	1275	B6
ES560L-06-132G/160P-3	310	160	259	132	68	3850	1275	
ES560L-07-160G/200P-3	387	200	314	160	75	4100	1800	B7
ES560L-07-200G/220P-3	427	220	387	200	75	4600	1800	
ES560L-07-220G/250P-3	450	250	427	220	75	5100	1800	
ES560L-08-250G/280P-3	525	280	481	250	72	5782	2190	B8
ES560L-08-280G/315P-3	600	315	550	280	72	6252	2190	
ES560L-08-315G/355P-3	660	355	616	315	72	7866	2190	
ES560L-09-355G/400P-3	720	400	650	355	75	9100	2700	B9
ES560L-09-400G/450P-3	810	450	720	400	75	9900	2700	
ES560L-09-450G/500P-3	870	500	810	450	75	10500	2700	
ES560L-09-500G/560P-3	980	560	870	500	75	11500	2700	
ES560L-09-560G/630P-3	1060	630	980	560	75	12600	2700	

Note: Rated power is measured under rated voltage 380V

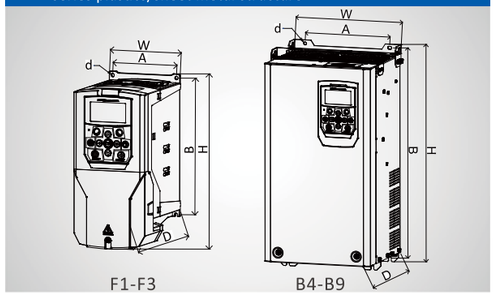
G- constant torque load application, P-square torque load application, - indicate that the item is not supported.Rated value
IN Continuous and available rated current without load at 40℃
Imax Maximum output current..Ten seconds are allowable at startup. Under other circumstances, the time depends on temperature

General load application:
ILd Continuous rated output current of P converter s at ≤ 40℃. The overload current value is allowed to reach 120%of
ILD in 1 minute out of every five minutes. The time depends on the drive temperature under other circumstances.
PLd Typical motor power in the light load application.

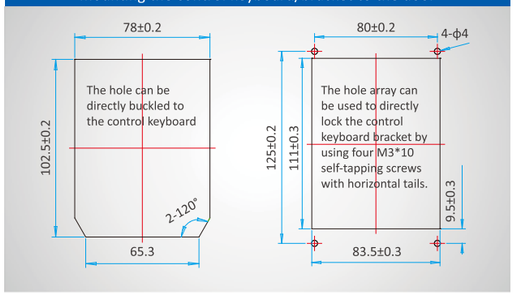
Heavy load application:
IHd Continuous rated output current of G converters at ≤ 40℃. The overload current value is allowed to reach 150%of
IHD in 1 minute out of every five minutes. The time depends on the drive temperature under other circumstances.
PHd Typical motor power in the heavy load application.

Installation Dimensions

Dimensions and installation schematic diagram of ES 560 series plastics/sheet metal structure



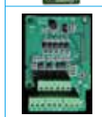
Shape and dimensions of the opening for directly mounting the control keyboard/bracket to the door



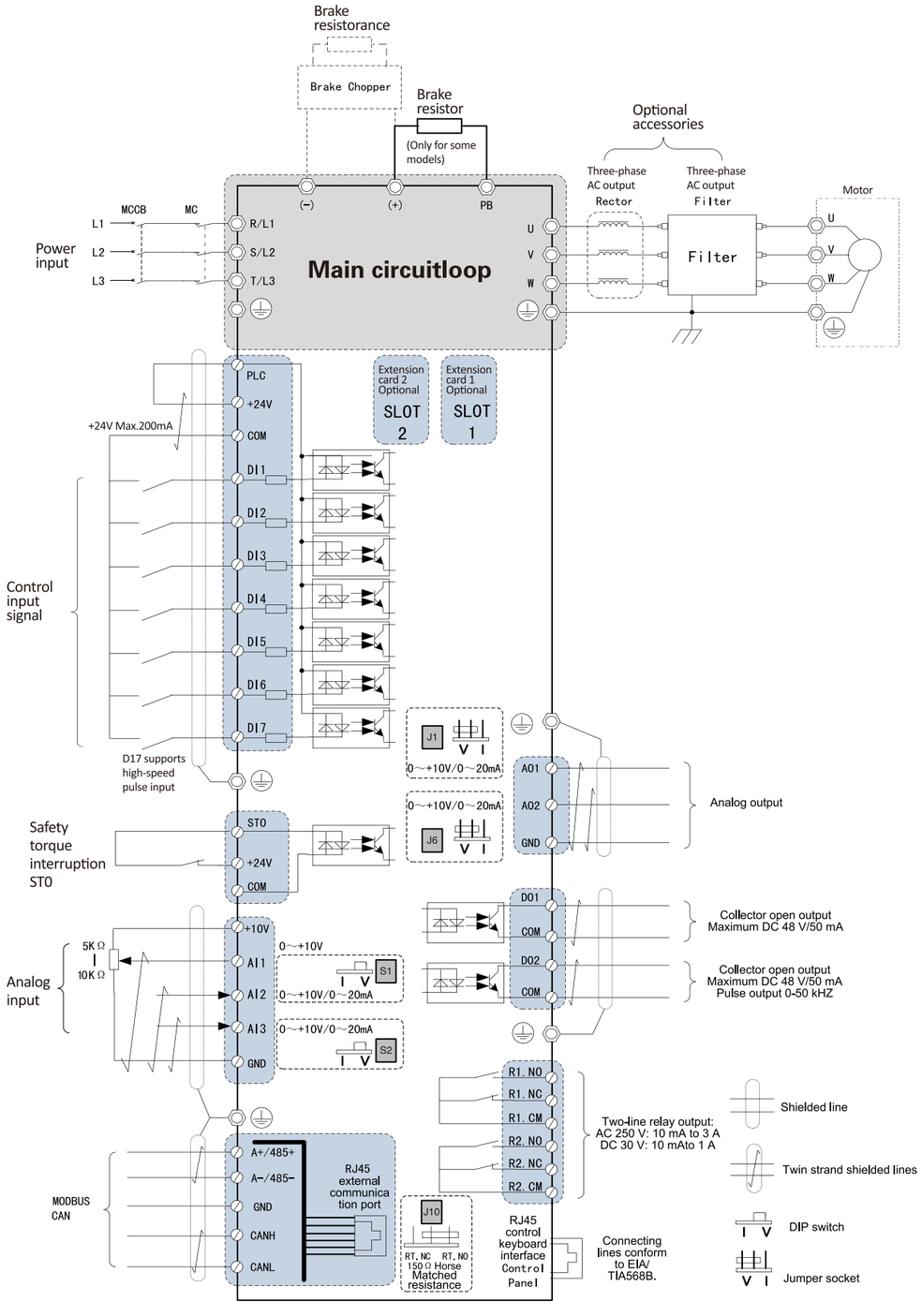
Shell Code	Installation Hole Width SpacingA (mm)	Installation Hole Height SpacingB (mm)	Installation Hole Sized (mm)	Appearance Width W (mm)	Appearance HeightH (mm)	Appearance ThicknessD (mm)	Net weight about (Kg)
F1	110	222	5.5	122	276	172	3.7
F2	140	238	6.0	155	292	172	4.8
F2A	160	296	6.0	175	336	192	5.1
F3	150	368	7.0	180	420	216	12.6
B4	200	479	6.5	225	495	221	22
B5	250	650	12.0	355	670	260	65
B6	357/75*	761	11.0	390	790	278	95
B7	357/115*	973/977	11.0	390	1001	295	140
B8	490/200*	1280	13.0	537	1035	340	200
B9	490/240*	1420	13.0	537	1455	380	240

Remarks: * indicates the hole spacing in the book-type mounting direction. For detailed dimensions, please consult our professional staff.

Optional Accessories

Legend	Model	Accessory and Main Function
	ESX-04-X/X-3B	B4 series products have optional built-in brake unit, and the model tail has [-B]
	ESX-05-X/X-3B	B5 series products have optional built-in brake unit, and the model tail has [-B]
	ES-CM-PD	Profibus-DP communication card, applicable to DB 9-pin interface
	ES-CM-CAN	CANopen communication card
	ES-RU-DTC	Grid voltage acquisition card: After being connected to the grid, it is used to detect the real-time phase voltage and phase to realize the switching between the industrial frequency and variable frequency.
	ES-RU-PL	Power-off synchronization interface card
	ES-CP-MU	Intelligent LCD control keyboard, this is optional
	ES-CP-MUE	LED control keyboard, this is the factory standard
	ES-CP-SU	Control keyboard external bracket, suitable for LCD keyboard cabinet door installation
	ES-SU-B6	Floor mounting base suitable for B6 and B7 shape models
	ES-SU-B8	Floor mounting base suitable for B8 and B9 models
	Debug Window	After installing this software, visual parameter debugging, fault display, waveform monitoring, etc. can be easily realized through the PC terminal.

Standard Wiring Diagram 1 (Applicable to ES560 Series and F1-B9)



Service product summary

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