

Frequency Inverter | Soft Starter | Servo Drive & Motor | PLC Manufacturer

# K-DRIVE

Energy efficient, Beautiful environment



## KD600E SERIES ELEVATOR/LIFT PURPOSE SERIES



### SHENZHEN K-EASY AUTOMATION CO.,LIMITED

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Version: A01





## COMPANY PROFILE

Shenzhen K-Easy Automation Co., Limited is a professional manufacturer, specialize in R&D And production of AC drives. We have built up a comprehensive product family. Frequency inverters' power covers the range from 0.4 to 630kW, and voltage range is between 220V and 480V. More than inverters are running smoothly 300, 000 units at different industrial sites.

### Why Us

- ◆ We believe "quality is life", so we will test all products before shipment, All Module of our VFD will be used quality is life with Infineon only, With years of persistence, the total failure ratio of Our frequency inverters has been controlled below 1%. We never lose a customer because of the quality problem;
- ◆ With Strong R&D and Engineer Team, makes our after-service very easy, For all doubts and requesting for technologies supporting, We can offer detailed Solution without delay, so for us, "Not Only Products, But also solutions";
- ◆ All our products will be offered with 24 months Warranty Period instead of 18 months.

Join us, enjoy the business.

## QUALIFICATION CERTIFICATE



## Products Introduction

KD600E series inverter is designed according to the carrying characteristics of elevator. It adopts high performance vector control technology, can control both asynchronous motor and synchronous motor. For asynchronous motor open-loop vector control, it combined with innovative sensor start/stop compensation technology without weighting to ensure the comfort when elevator start/stop without weighting device.



KD600: Power Rate

1 phase & 3 phase Input  
3 phase output

220V (+20%) 0.4KW~4.0KW

380V (+20%) 0.4KW~630KW

## Best Solution For General Purpose Series

Vector Control

PID

Multi-step Freq.

ModBus

Over-voltage & Over-current stall control

Torque Boost

Wobble Frequency Control

Simple PLC

FDT

.....

Start Torque @0.5Hz  
**100%**

Overload Capability  
**200%**

Speed accuracy ±  
**0.5%**

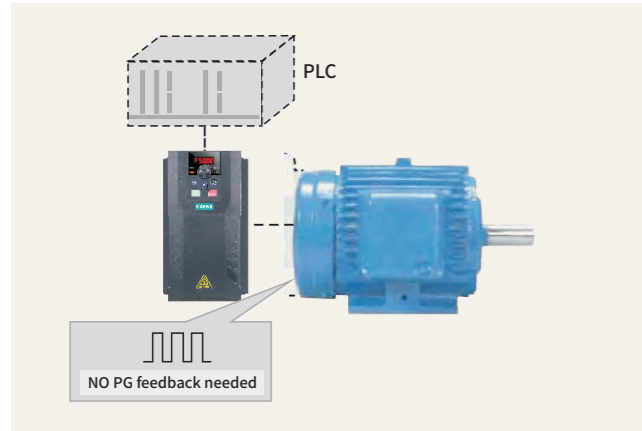
Ambient Temp °C  
**40**

Speed Regulation  
**1:100**

Multi-step speed max.  
**16**

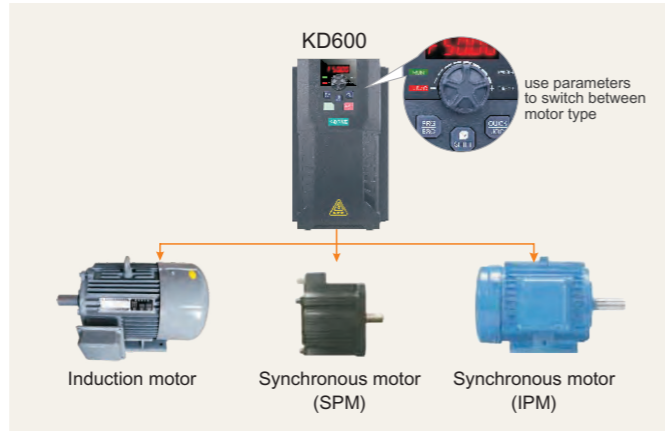


## REASONABLE STRUCTURAL DESIGN



### Positioning Capability without External Devices

- Use an IPM motor to perform position control –without motor feedback. Electrical saliency in IPM motors makes it possible to detect speed, direction and rotor position without the use of external feedback devices.
- Positioning functionality without a PLC. Visual programming in DriveWorcs EZ eliminates the need for external controllers by giving the user the power to create customized functions such as position control.



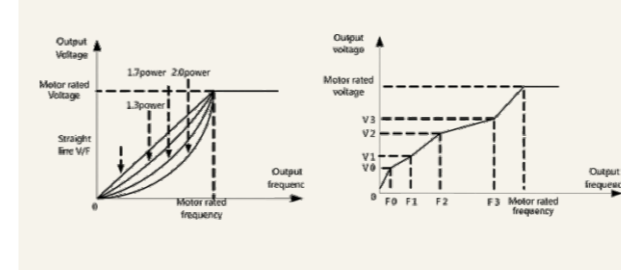
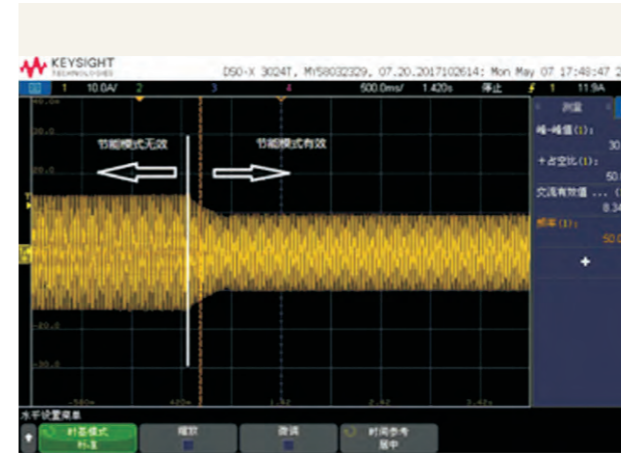
### Advanced drive technology

- Capable of driving different types of motor. KD600 series runs not only induction motors, but also synchronous motors like IPM\*1 and SPM\*2 motors with high performance open and closed loop vector control.
- Minimize equipment needed for your business by using the same drive to run induction and synchronous motors.
  - Interior Permanent Magnet Motor (Motors with permanent magnets inserted into the rotor)
  - Surface Mounted Permanent Magnet Motor (Motors with permanent magnets mounted on the surface of the rotor)

## ADVANCED DESIGN

<p><b>C3</b> EMC Filter</p> <p>C3 Level Filter Build-In Standardly Better EMC Performance</p>	<p><b>IGBT</b> IGBT Selection</p> <p>Selection Of Large Margin Current &gt; 2 Times of VFD Current</p>	<p><b>200%</b> Overload Capacity</p> <p>120% long time running without trip. 150% for 60 seconds 180% for 10 seconds</p>
<p><b>±15%</b> Voltage Range</p> <p>Compatible with ±15% input voltage fluctuation, output voltage stable.</p>	<p><b>S Curve</b> S Curve</p> <p>S Curve Acceleration/Deceleration Better Start /Stop Performance</p>	<p><b>Flying Start</b> Flying Start Function</p> <p>Restart The Running Motor Smoothly No Current Surge High Accuracy</p>
<p><b>Protection</b> Protection</p> <p>Overcurrent, Overvoltage, PID feedback failure, Overheat, Undervoltage, The main contactor is abnormal, Motor overload, Fast protection, Unbalanced output, Frequency conversion overload, System abnormal, Motor detection abnormal, Output phase loss, Input phase loss, Short circuit protection of control board power supply.</p>		

## DRIVE DESIGN & FEATURES



### Energy saving function

- It has excellent automatic energy saving function, only need to set the maximum energy saving target, as long as the operation meets the energy saving condition, it can enter the automatic skill state.
- By setting the VF function, it can realize the application of 1 drag and long distance control to meet the application of the transformation occasion.

### Perfect protection system

- Designed for 10 years of maintenance-free operation.
  - Cooling fan, capacitors, relays, and IGBTs have been carefully selected and designed for a life expectancy up to ten years.
- \* Assumes the drive is running continuously for 24 hours a day at 80% load with an ambient temperature of 40°C.



### Independent duct design

- Independent air duct design, effectively preventing dust entering inverter, causing short-circuit and other faults and improving reliability;
- Use bigger air volume and long life cooling fan effectively reduces the internal temperature rise of the inverter and ensures reliable and stable operation of inverter.

### All series support LCD panel





## SPECIFICATION

Input & Output	
Input voltage	1AC 220~240V(±15%) 3AC 220~240V(±15%) 3AC 380~460V(±15%)
Input frequency	50Hz/60Hz ±5%
Output voltage	0~input voltage, deviation<±3%
Output frequency	0~600Hz

Control Characteristics	
Control mode	V/f control Sensor-less vector control Torque control
Speed accuracy	±0.5% (V/f) ±0.2% (SVC)
Speed fluctuation	±0.3% (SVC)
Torque response	< 10ms (SVC)
Starting torque	0.5Hz : 150% (V/f) 0.25Hz:180% (SVC)
Overload capability	150% Rated Current60s 180% Rated Current10s 200% Rated Current1s
Simple PLC Multi-step speed	16 steps speed External digital signal control Internal clock
PID function	Standard build-in
Communication	Modbus

Featured Functions	
Featured functions	Input & Output delay
	Flexible parameters display
	AVR (Automatic Voltage Regulation)
	Timing control, fixed length control, etc.
	Simple PLC, 16-steps speed control
	Torque control build-in
	S curve acceleration/deceleration
Multi-functional programmable keypad	
V/f separated control	

Environment Limitation	
Installation location	Without direct sunlight, free from dust, corrosive gases, oil mist, flammable gases, water vapor, water drop and salt, etc.
Altitude	0~2000m Derated1% for every100m when the altitude is above1000meters
Ambient temperature	-10°C ~ 50°C (Output derated while the temperature is higher than40°C)
Storage temperature	-20°C ~ +70°C
Relative humidity	5~95%, no condensation

## COOPERATION BRAND



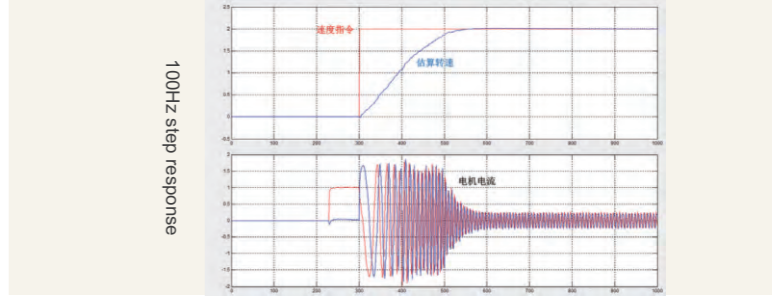
World-class components inside, stronger "bones", healthier "body".



## DRIVE DESIGN & FEATURES

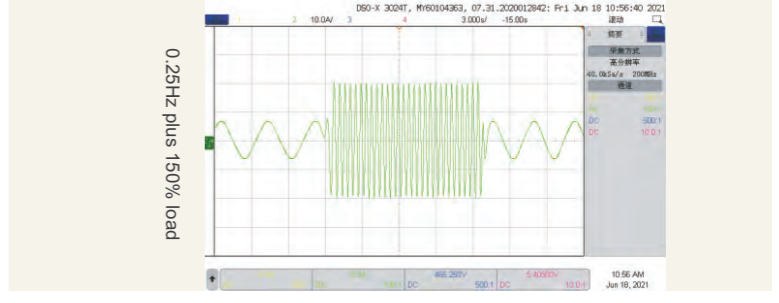
### High speed accuracy and wide speed range

- High speed accuracy and wide speed range: Steady speed accuracy: ±0.5% (SVC), ±0.02% (VC); Speed range: 1:200 (SVC), 1:1000 (VC),
- Heavy load overload capability: 110% rated current for long-term stable operation; 150% rated current for 1 minute; 180% rated current 10s.



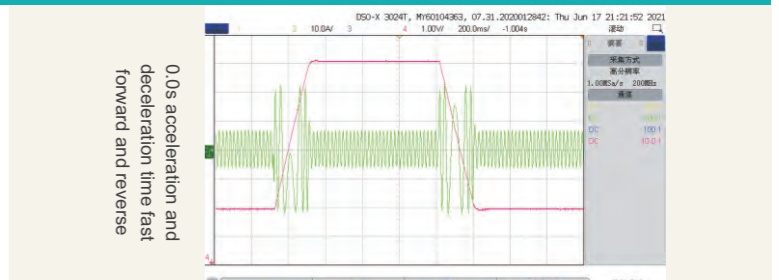
### High torque in low speed, fast response

- High torque in low speed, fast response Load capacity in low speed: VF: 180%@0.50Hz ; SVC: 180%@0.25Hz ; VC: 200%@0.00Hz.



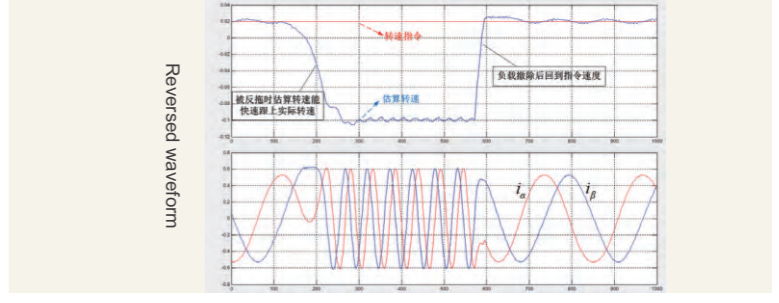
### Rapid response to impact loads

- When it meets with sudden load change, inverter can quickly restore the speed, reduce the speed fluctuation, and ensure the production stability and high quality finished products.



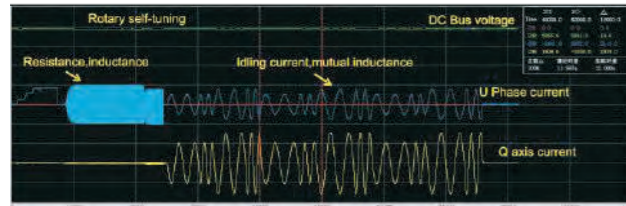
### Optimized SVC algorithm, stable operation in power generation

- At present, most of the inverters can not work stably under the SVC control mode (especially in the case of being reversed).
- KD600 can run very well, and it achieves great convenience in some special applications (such as tension control in rewinding and winding).

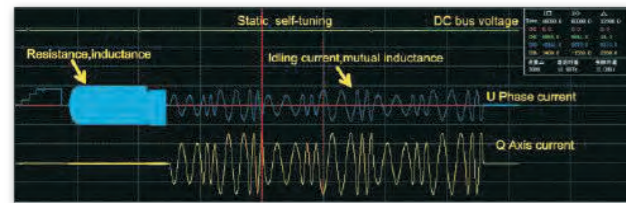




## PERFORMANCE FEATURES



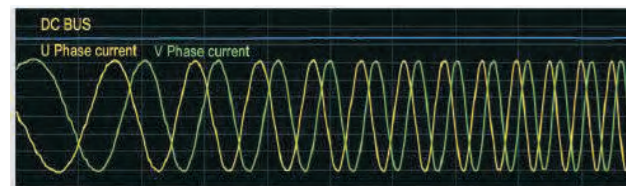
Rotary self-tuning



Fully static self-tuning

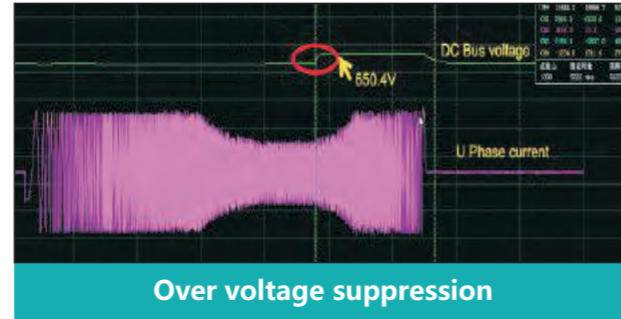
### Self-tuning of motor parameters

- It could accurately acquire the motor parameters both in rotary and static self-tuning, so as to provide higher control accuracy and response speed, which is convenient and simple.
- Rotary self-tuning:** Must unload the motor. Suit for applications with higher requirement of control accuracy.
- Fully static self-tuning:** Leading motor tuning algorithm, can acquire the motor parameters in static status, which is comparable to the rotary self-tuning.



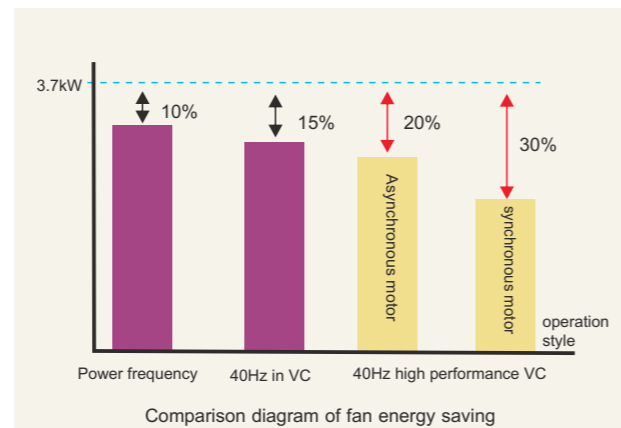
### Over current suppression

The current suppression function could avoid the frequent OC fault of inverter. While the current is over the current protection point, it could continuously limit the current below the protection point, so as to protect devices, prevent the overcurrent fault caused by sudden load or interference and reduce the loss caused by stop without reason.



### Over voltage suppression

The overvoltage suppression function could prevent inverter from overvoltage fault in ACC/DEC process. During ACC/DEC, if the bus voltage of inverter reaches or exceeds the overvoltage protection point, the overvoltage suppression function could suppress the rising of bus voltage by automatically adjust the operation frequency, so as to protect the devices and avoid the overvoltage fault caused by the rising of bus voltage.

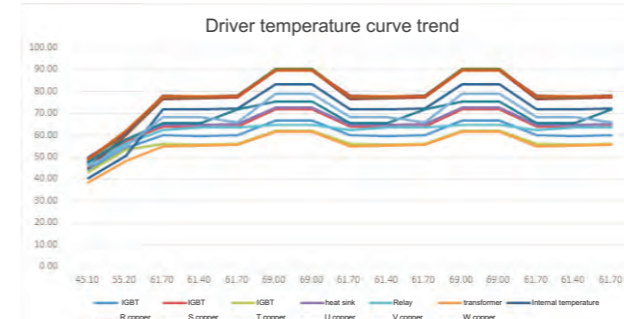


Comparison diagram of fan energy saving

### Excellent energy-saving functions

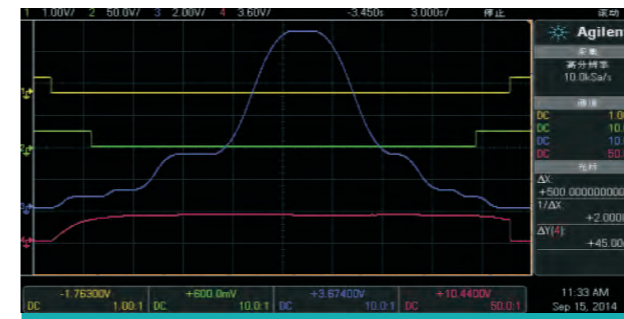
Adopt the new generation of energy-saving control technology to realize the high-efficiency operation of induction motor; reduce the excitation current according to the load current, and automatically adjust according to the loading condition; improve the motor efficiency at most; reduce the motor consumption and energy consumption. 30% of AM&PMSM adopt the VC mode to drive PMSM and the energy utilization could increased by more than 10%.

## INNOVATIVE FEATURES



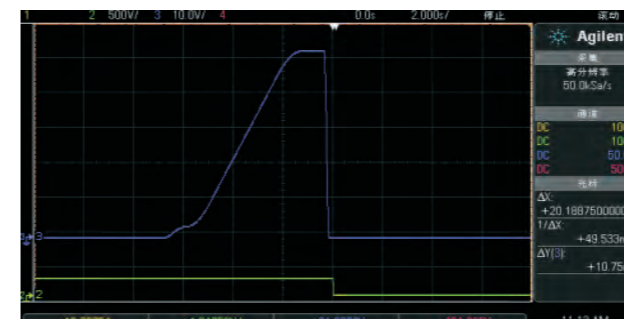
### Rigorous temperature rise test

- After most severe testing, it meets the extreme load and long-term operation ;
- The whole VFD is within the thermal design safety range.



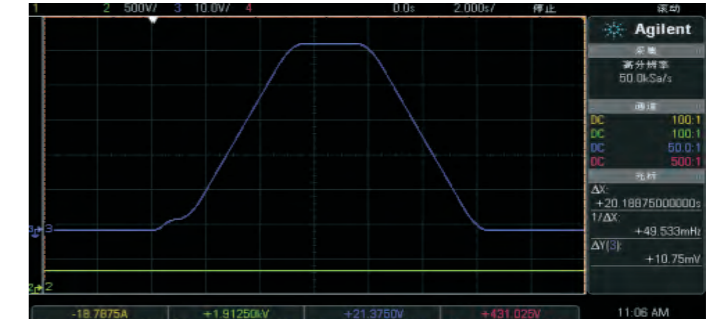
### Smooth control

- Dedicated braking output control for smooth stat and best elevator leveling control.



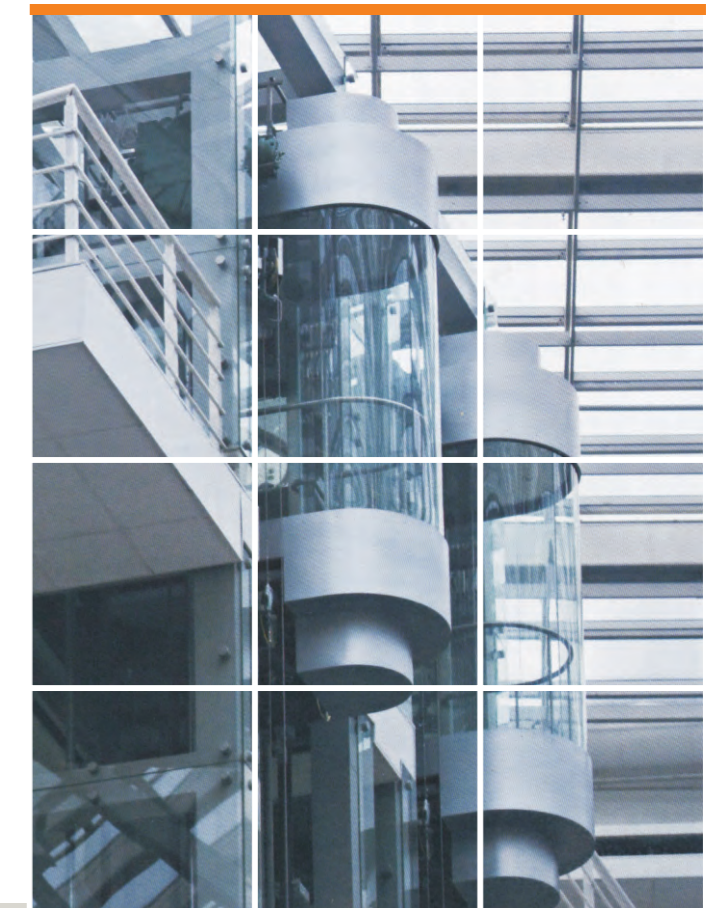
### Repair mode feedback

- If forward or reverse command is canceled under inspection mode, inverter stop immediately.



### Inspection running mode for the safety

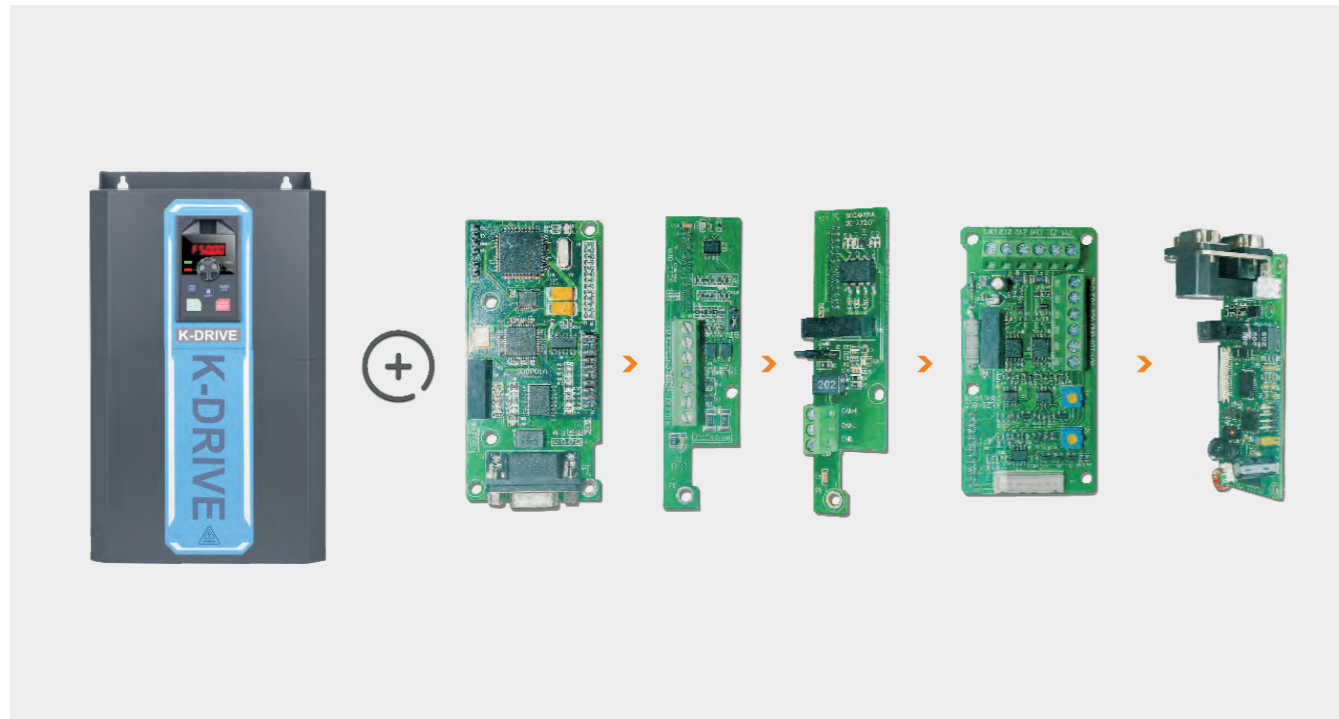
- Emergency operation mode supported by UPS power;
- When power off, it can be operated by 220V single phase UPS power. Automatic speed control to prevent motor stall when voltage is not enough. Effective use of UPS voltage light load direction search function.





## EXTERNAL AND EXPANSION CARDS

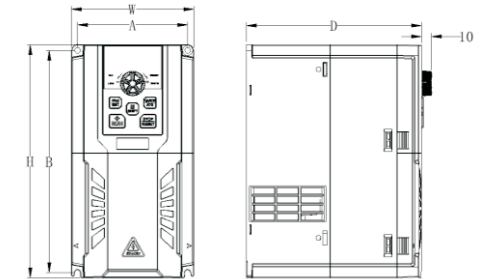
Various function expansion cards, IO cards, relay output cards, and various PG cards can be selected according to requirements to match various encoders, communication expansion cards, etc. Can be customized according to demand.



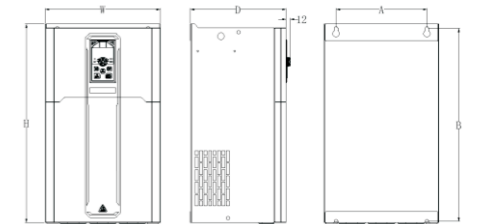
Name	Model	Function
I/O expansion card 1	KD600-IO1	5 digital inputs, one relay output, one analog AO2 output, one digital y2 output, and one temperature detection (PT100/PT1000/PTC/KTY).
I/O expansion card 2	KD600-IO2	Two digital inputs, one relay output, one analog AO2 output, and one LCD expansion network port RJ45 socket.
RS-485 communication card	KD600-ISO485	One isolated MoDBus communication adapter card
CAN communication expansion card	KD600-CAN	CANOPEN communication adapter card
ProFinet communication card	KD600-PN	ProFinet communication card
Profbus-DP communication card	KD600-DP	Profbus-DP communication card
Ethercat communication card	KD600-Ethercat	Ethercat communication card
Open collector ABZ encoder	KD600-PG1	Open collector PG card (PG card 1 can only be applied to asynchronous machines; compatible with complementary output, the encoder card output DC power supply can be selected +12V or +5V (jumper selection))
Differential input ABZ encoder card	KD600-PG3	ABZ differential signal input PG card
Resolver Interface Card	KD600-PG6	Applicable to resolver, DB9 interface, optional matching shielded encoder cable.
LCD screen	KD600-LCD	The LCD screen needs to be used with a 102 expansion card.

## OUTLINE AND INSTALLING DIMENSION

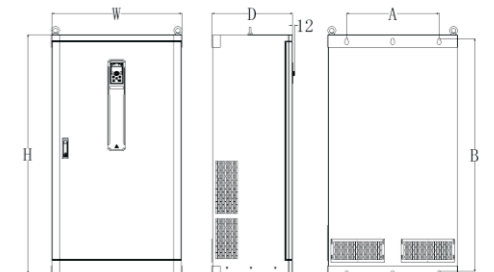
AC Drive Model	Adapter motor (KW)	Rated Input Current(A)	Rated Output Current(A)	Installation size(mm)		Dimensions (mm)			Aperture
				A	B	H	W	D	
<b>Input voltage: single-phase 220V</b>				<b>Range: -15%~20%</b>					
KD600E-2S-0.4G	0.4	5.4	2.3	76	156	165	86	140	5
KD600E-2S-0.7G	0.75	8.2	4.0						
KD600E-2S-1.5G	1.5	14.0	7.0						
<b>Input voltage: three-phase 380V</b>				<b>Range: -15%~20%</b>					
KD600E-4T-0.7G/1.5P	0.7	3.4	2.1	76	156	165	86	140	5
KD600E-4T-1.5G/2.2P	1.5	5.0	3.8						
KD600E-4T-2.2G/4.0P	2.2	5.8	5.1						
KD600E-4T-4.0G/5.5P	4.0	10.5	9.0	98	182	192	110	165	5
KD600E-4T-5.5G/7.5P	5.5	14.6	13.0						
KD600E-4T-7.5G/9.0P	7.5	20.5	17.0						
KD600E-4T-9.0G/11P	9.0	22.0	20.0	111	223	234	123	176	6
KD600E-4T-11G/15P	11	26.0	25.0						
KD600E-4T-15G/18.5P	15	35.0	32.0						
KD600E-4T-18.5G/22P	18.5	38.5	37.0	174	319	330	189	186	6
KD600E-4T-22G/30P	22	46.5	45.0						
KD600E-4T-30G/37P	30	62.0	60.0						
KD600E-4T-37G/45P	37	76	75	200	410	425	255	206	7
KD600E-4T-45G/55P	45	92	91						
KD600E-4T-55G/75P	55	113	110						
KD600E-4T-75G/90P	75	157	152	290	544	560	350	268	10
KD600E-4T-90G/110P	90	180	176						
KD600E-4T-110G/132P	110	214	210						
KD600E-4T-132G/160P	132	256	253	320	678	695	410	295	10
KD600E-4T-160G/185P	160	307	304						
KD600E-4T-185G/200P	185	345	340						
KD600E-4T-200G/220P	200	385	380	500	1170	1200	590	365	14
KD600E-4T-220G/250P	220	430	426						
KD600E-4T-250G/280P	250	468	465						
KD600E-4T-280G/315P	280	525	520	500	1255	1290	700	400	16
KD600E-4T-315G/350P	315	590	585						
KD600E-4T-350G/400P	350	665	650						
KD600E-4T-400G/450P	400	785	725	/	/	1800	1000	500	/
KD600E-4T-450G/500P	450	883	820						
KD600E-4T-500G/550P	500	920	900						
KD600E-4T-550G/630P	550	1020	1000	/	/	2200	1200	600	/
KD600E-4T-630G/710P	630	1120	1100						
KD600E-4T-710G/800P	710	1315	1250						
KD600E-4T-800G/900P	800	1525	1450	/	/	2200	1200	600	/



Schematic diagram of plastic dimensions and installation dimensions below 22KW



Schematic diagram of overall dimensions and installation dimensions of 30-132KW sheet metal chassis



160KW Inverter Dimensions and Installation Dimensions

**INSTRUCTION**

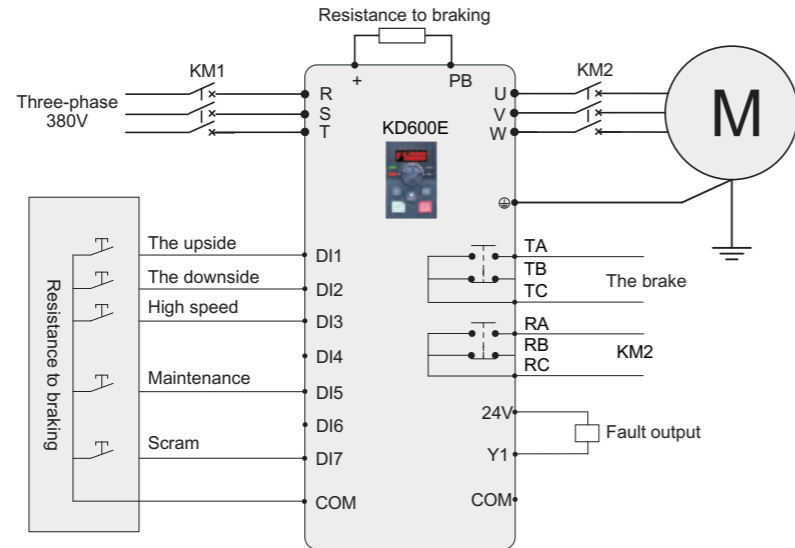
- All KD600E Series is Module Design IGBT.
- KD600E Series 0.4KW~22KW All Has Brake Unit Built In, and 30KW~400KW, All Can Make Brake Unit Built in.
- All Series Can Changed Into 480V Series.



## WIRING MODE

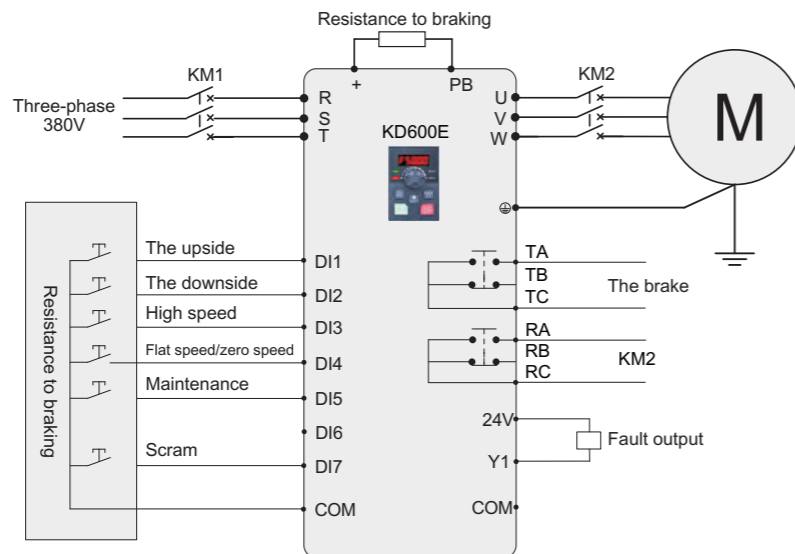
### Single multi-speed terminal elevator controller

For the elevator controller with only one multi-segment speed changing terminal, the high-speed segment and the layer speed segment are controlled by the on-off of the high-speed terminal. The wiring diagram of such elevator controller and frequency converter is as follows:



### Double multi-speed terminal elevator controller

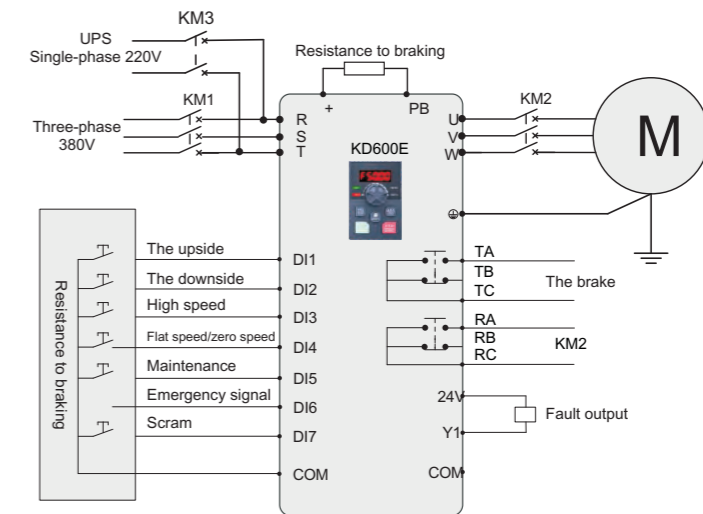
For the elevator controller with two multi-speed changing terminals, its high speed is controlled by the on-off of one terminal, and the other terminal is to control the flat speed or zero speed according to different controllers. The wiring diagram of the elevator controller and frequency converter with two multi-speed terminals is as follows:



## WIRING MODE

### Emergency operation mode

When the elevator is in use, if the system's power supply suddenly fails, it may result in passengers being locked in the car. KD600E series elevator inverter can support the emergency UPS power supply operation for emergency power outage operation, and the emergency signal can be received by the inverter terminal DI6. The wiring diagram is as follows:



### Closed loop elevator control

KD600E series elevator inverter can support closed-loop control, and provides a variety of PG cards for use with different encoders. Please refer to Chapter 5 of KD600 series User manual for PG card information. The wiring diagram of elevator controller and frequency converter for closed-loop elevator control is shown in the following figure:

