

# CTS-Drive



## CTS180 SERIES Vector inverter



### QUALIFICATION HONOR

(ISO9001 quality management system certification & CE certificate)



### BIGGER SIZE, BIGGER POWER

Do whatever you want | Give you what you want



### OUTSTANDING QUALITY

- 01 100% Start Torque@0.5Hz
- 02 200% Overload Capability
- 03 ±0.5% Speed accuracy
- 04 40 °C Ambient Temp
- 05 1:100 Speed Regulation
- 06 16 Multi-step speed max.

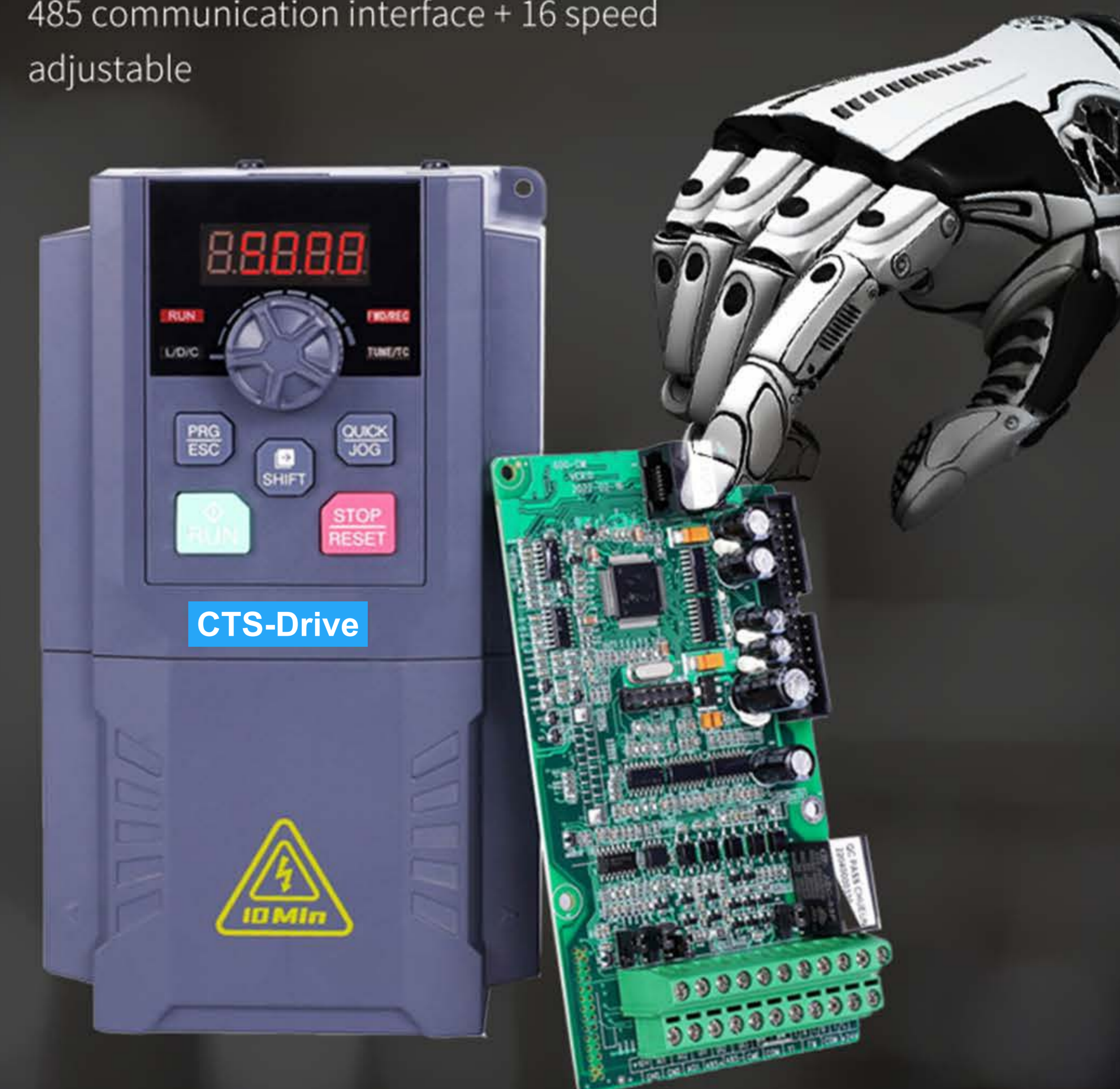
### USE MORE VARIETY

Control panel can be extended externally



### FULL FUNCTIONING

485 communication interface + 16 speed adjustable



### NEW KEYBOARD

more convenient to use



- PRG ESC PROGRAM / ESCAPE KEY
- SHIFT SHIFT KEY
- QUICK JOG JOG RUN / DIRECTION KEYS
- RUN RUN KEY
- STOP / RESET STOP / RESET KEY
- INCREMENT KEY (+) / DECREMENT KEY (-)

## RELIABLE DEVICE

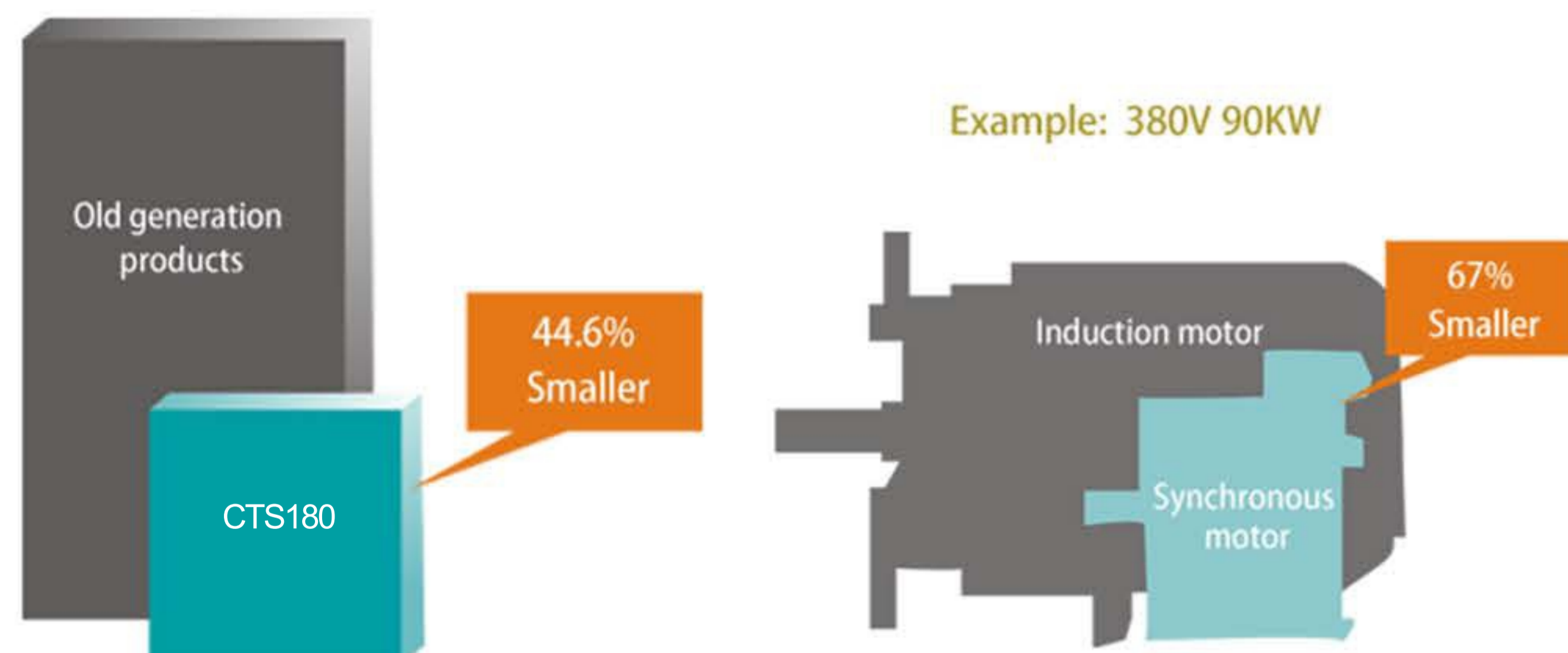
Adopt world-class brand devices



## METICULOUS JUST TO SURPASS

### MORE COMPACT STRUCTURE

CTS180 continues to make applications even smaller by combining the compact designed drive with the light, efficient design of a synchronous motor.

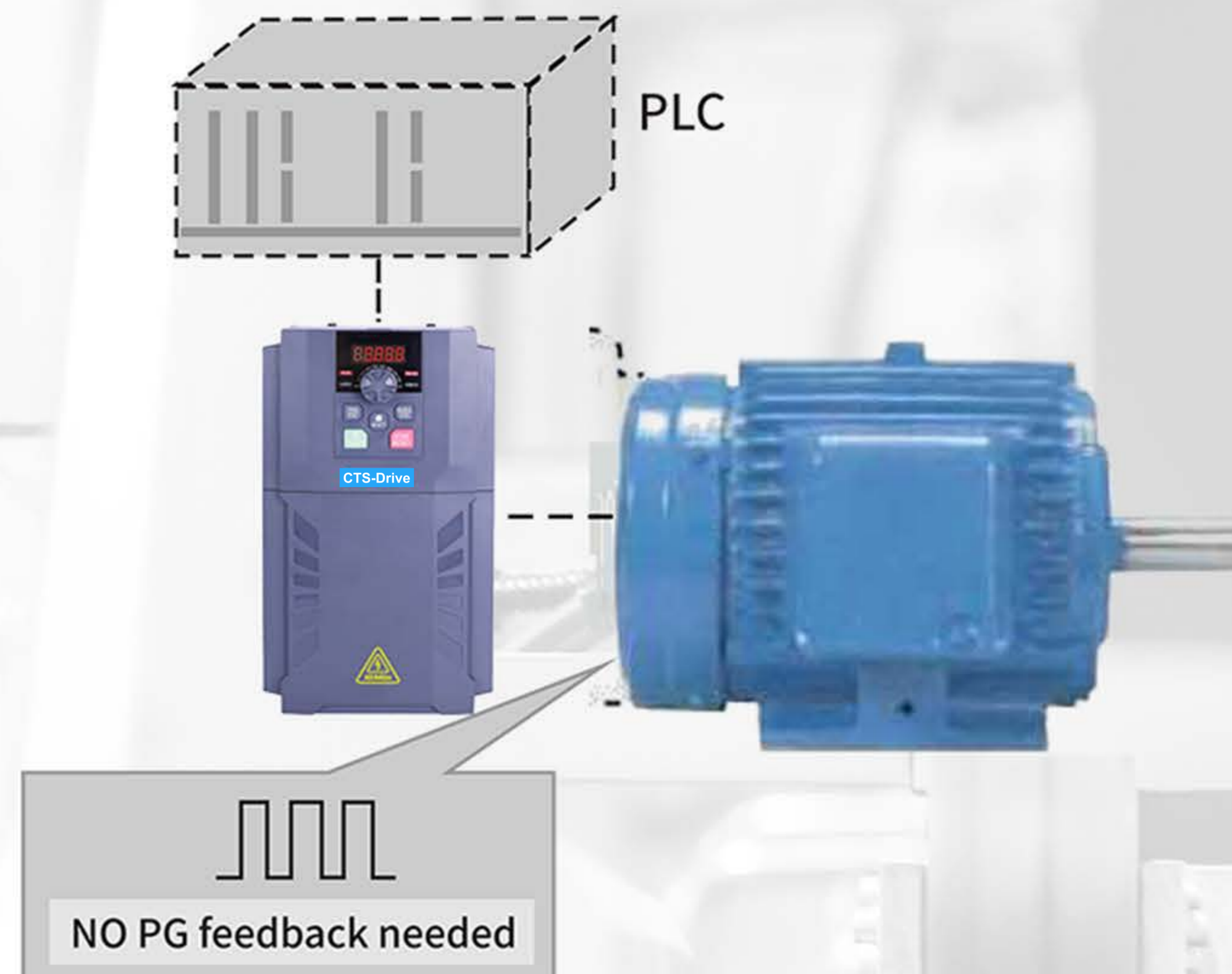


### INDEPENDENT AIR DUCT DESIGN

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.

## POSITIONING CAPABILITY WITHOUT EXTERNAL DEVICES



## ADVANCED DRIVE TECHNOLOGY



## EXTERNAL AND EXPANSION CARDS



Name	Model	Function
I/O expansion card 1	CTS180-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	CTS180-IO2	Two digital inputs, one relay output, one analog AO2 output, and one LCD expansion network port RJ45 socket.
RS-485 communication card	CTS180-ISO485	One isolated ModBus communication adapter card
CAN communication expansion card	CTS180-CAN	CANOPEN communication adapter card
ProFinet communication card	CTS180-PN	ProFinet communication card
Profbus-DP communication card	CTS180-DP	Profbus-DP communication card
Ethercat communication card	CTS180-Ethercat	Ethercat communication card
Open collector ABZ encoder	CTS180-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	CTS180-PG3	ABZ differential signal input PG card
Resolver Interface Card	CTS180-PG6	Applicable to resolver, DB9 interface, optional matching shielded encoder cable.
LCD screen	CTS180-LCD	The LCD screen needs to be used with a 102 expansion card.

## OUTSTANDING ABILITY

- EMC Filter**: C3 Level Filter Build-In Standardly Better EMC Performance
- IGBT**: Selection Of Large Margin Current>2 Times of VFD Current
- 200%**: 120% long time running without trip. 150% for 60 seconds. 180% for 10 seconds
- ±15%**: Compatible with ±15% input voltage fluctuation, output voltage s
- S Curve**: S Curve Acceleration/Deceleration Better Start /Stop Performance
- Flying Start**: Restart The Running Motor Smoothly No Current Surge

## APPLICATION

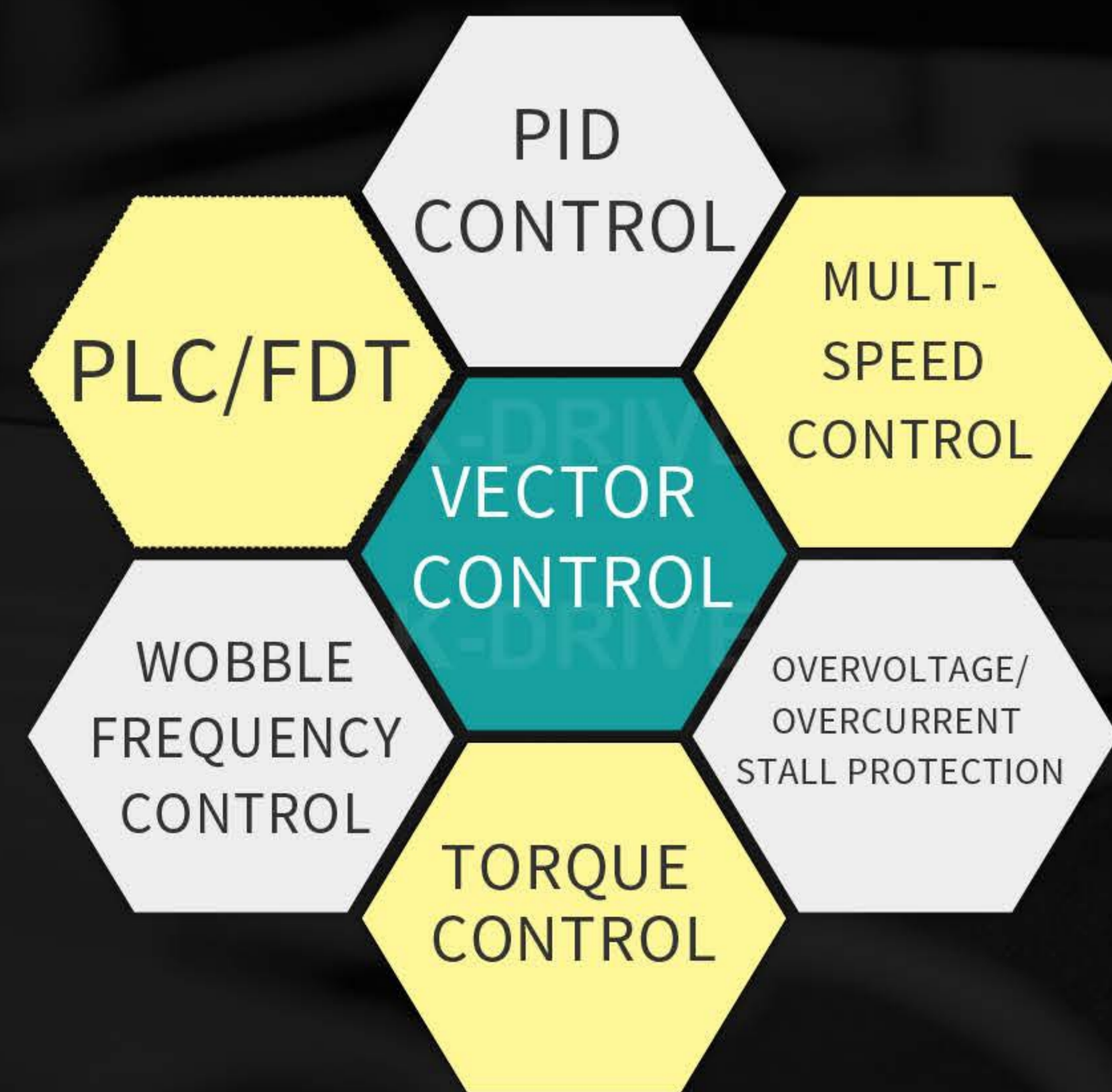
Fans / Water Pumps / Injection Molding Machines / Extruders / Ball Mills / Screw Air Compressors / Winding Machines / Mixers / Conveyors / CNC Machine Tools / Hoists, etc.

Construction site factory water plant / hotel community bath / central air conditioning water system / paper machinery factory / farm / sewage treatment plant / fire hospital traffic / machine tool equipment, etc.



# FEATURES A LOT

**POWER RANGE** Single-phase input: 220V 0.4KW~4.0KW Three-phase input: 380V 0.4KW~630KW



## 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

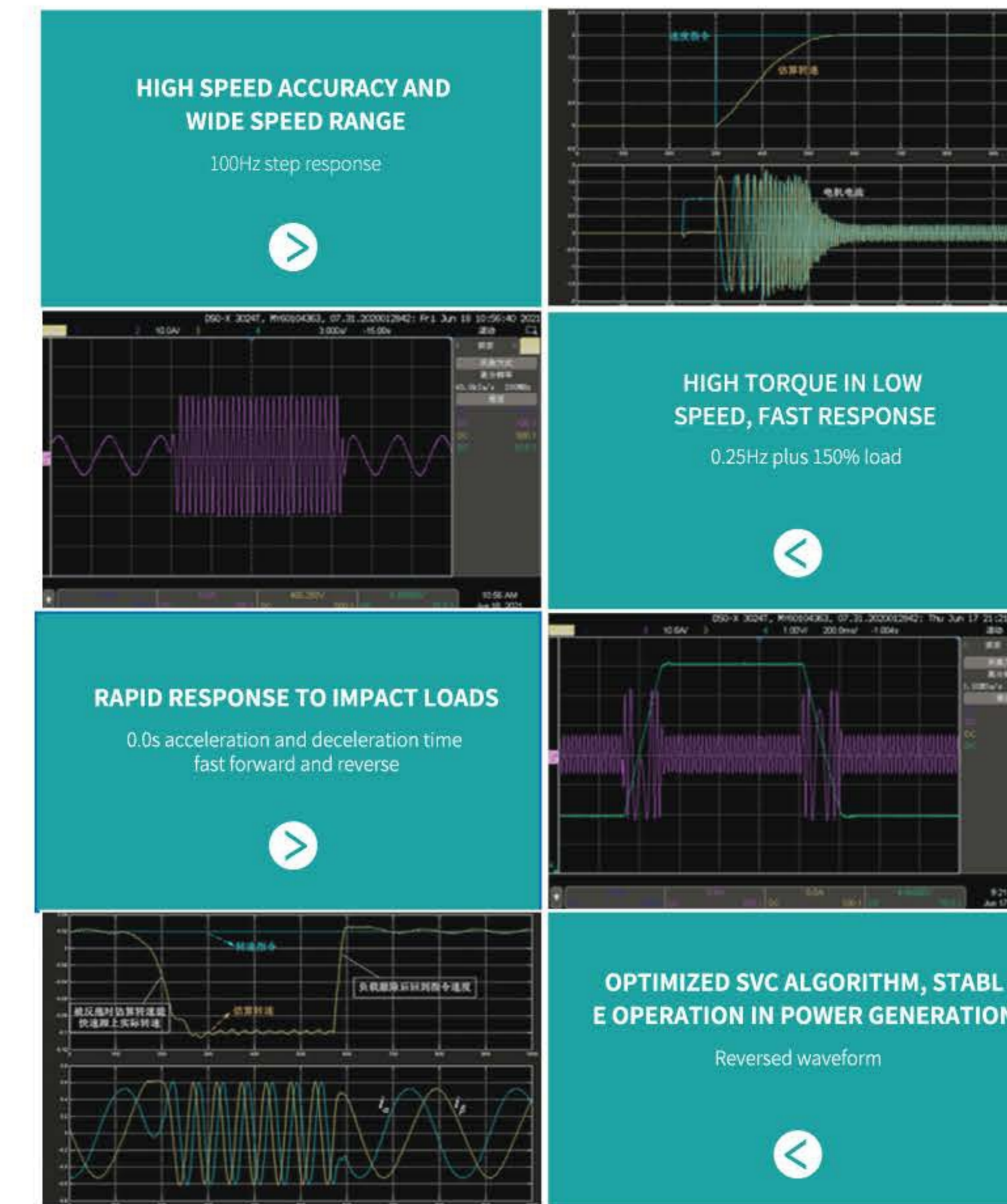
Control mode	v/f control Sensor-less vector control Torque control
Speed accuracy	±0,5% (V/f) ±0,2% (SVC)
Speed fluctuation	±0,3% (SVC)
torque response	< 10ms (SVC)
Starting torque	0,5Hz: 150% (V/f) 0,25Hz: 180% (SVC)
Overload capability	150% Rated current -60s 180% Rated current -10s 200% Rated current -1s
Simple PLC Multi-step speed	16 speed External digital signal control Internal clock
PID function	Standard build-in
Communication	Modbus

## Featured functions

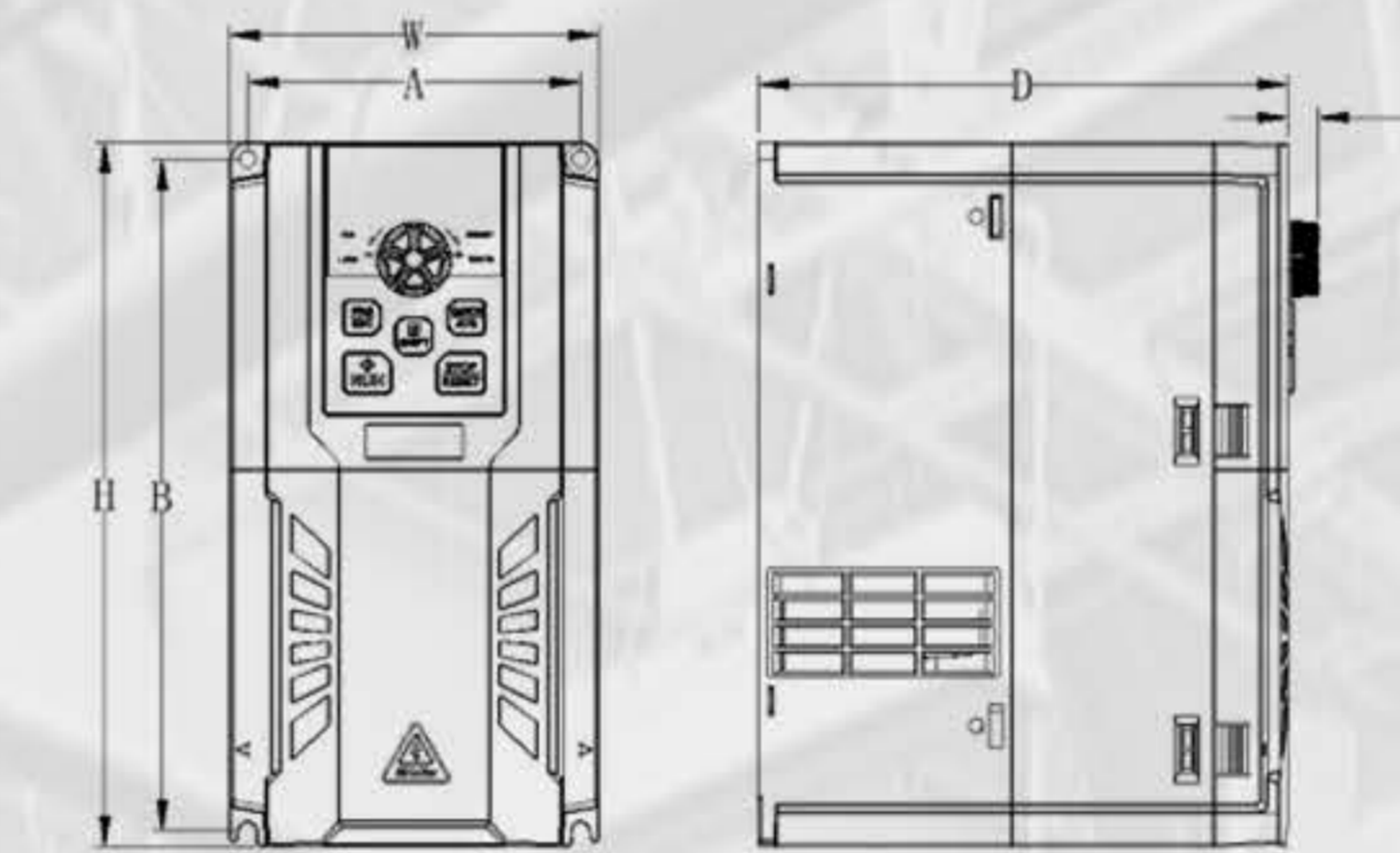
Featured functions	Input &Output delay Flexible parameters display AVR (Automatic Voltage Regulation) Timing control, fixed length control, etc. Simple PLC, 16-steps speed control Torque control build-in S curve accelerator/deceleration Multi-functional programmable keypad V/f separated control
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##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

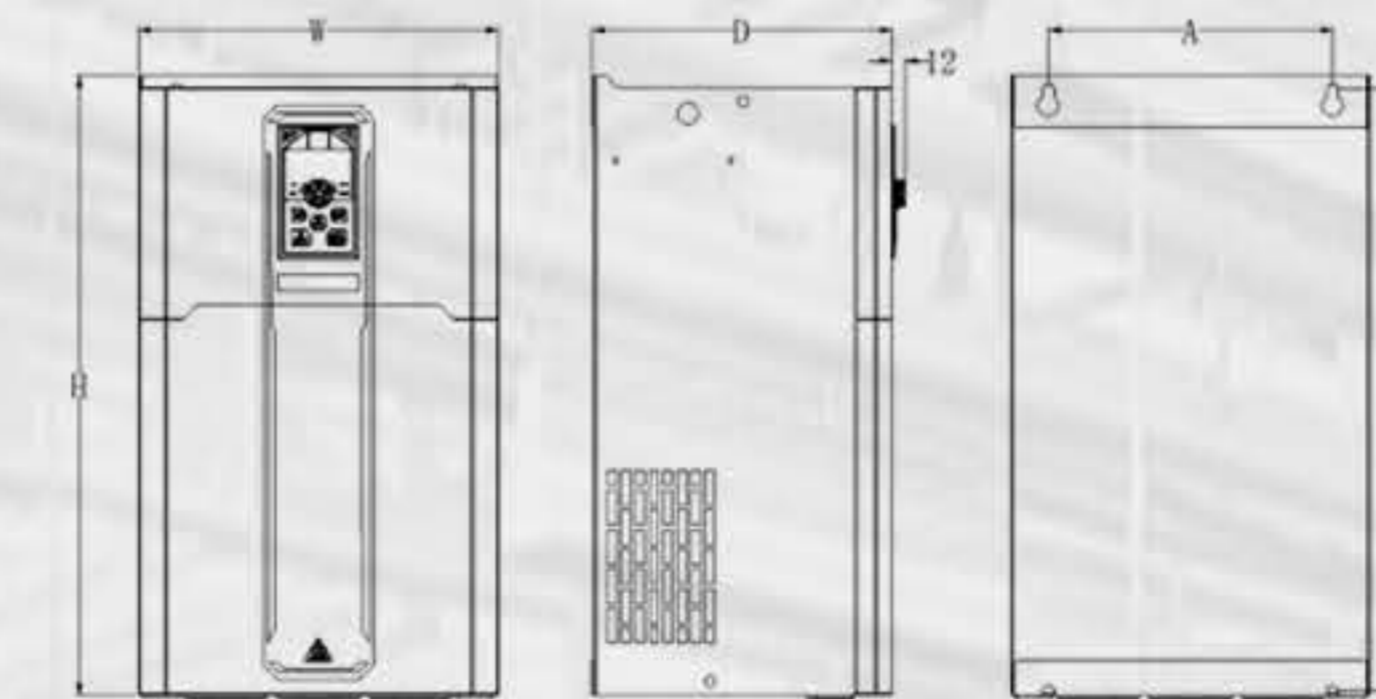
Installation location	Without direct sunlight, free from dust, corrosive gases, oil mist, flammable gases, water vapor, water drop and salt, etc.
Altitude	0~2000m Derated 1% for every 1000m when the altitude is above 1000meters
Ambient temperature	-10°C~50°C (Output derated while the temperature is higher than 40°C)
Storage temperature	-20°C~+70°C
Relative Humidity	5-95% no condensation



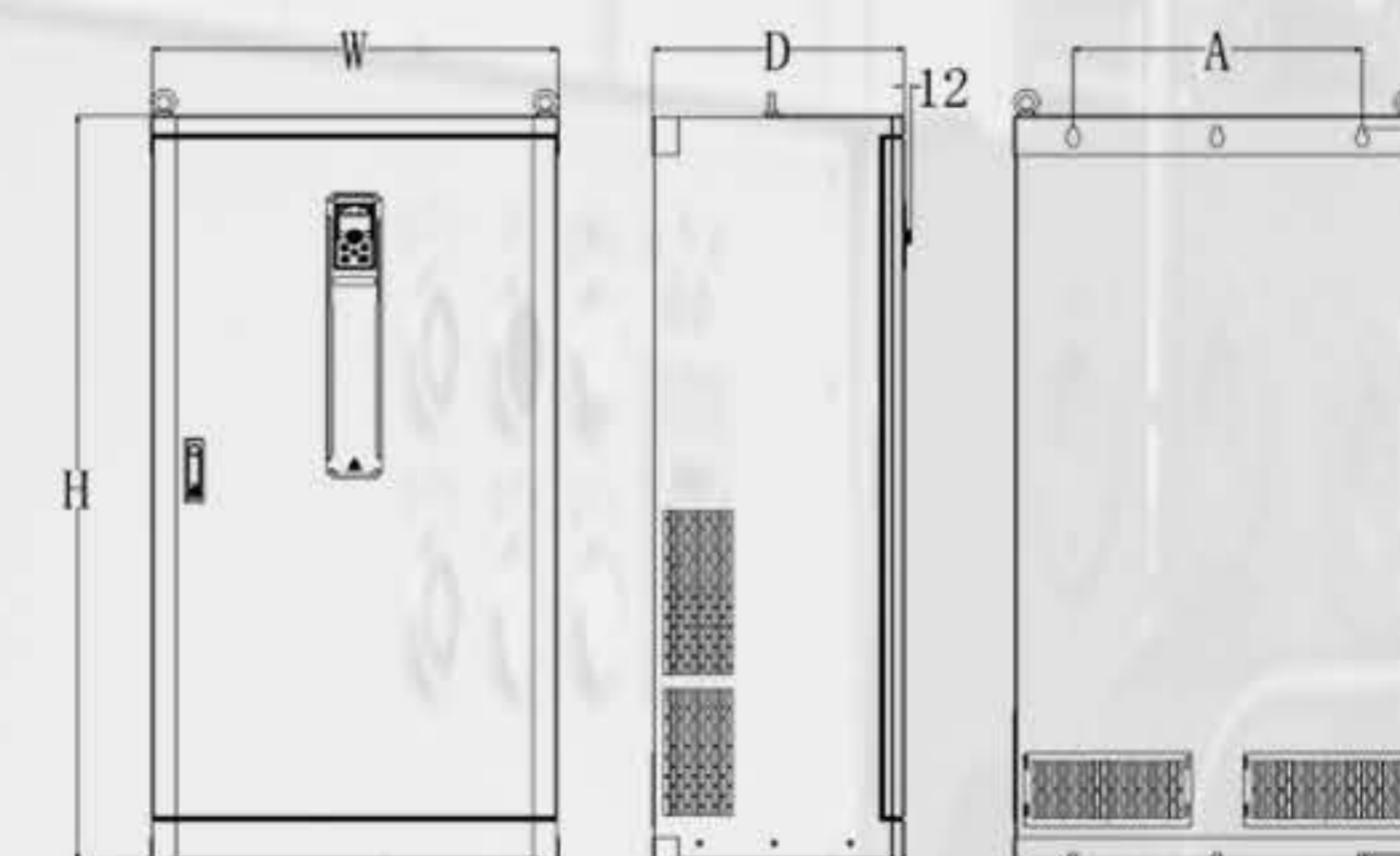
## BASIC WIRING DIAGRAM



Schematic diagram of plastic dimensions and installation dimensions below 22KW



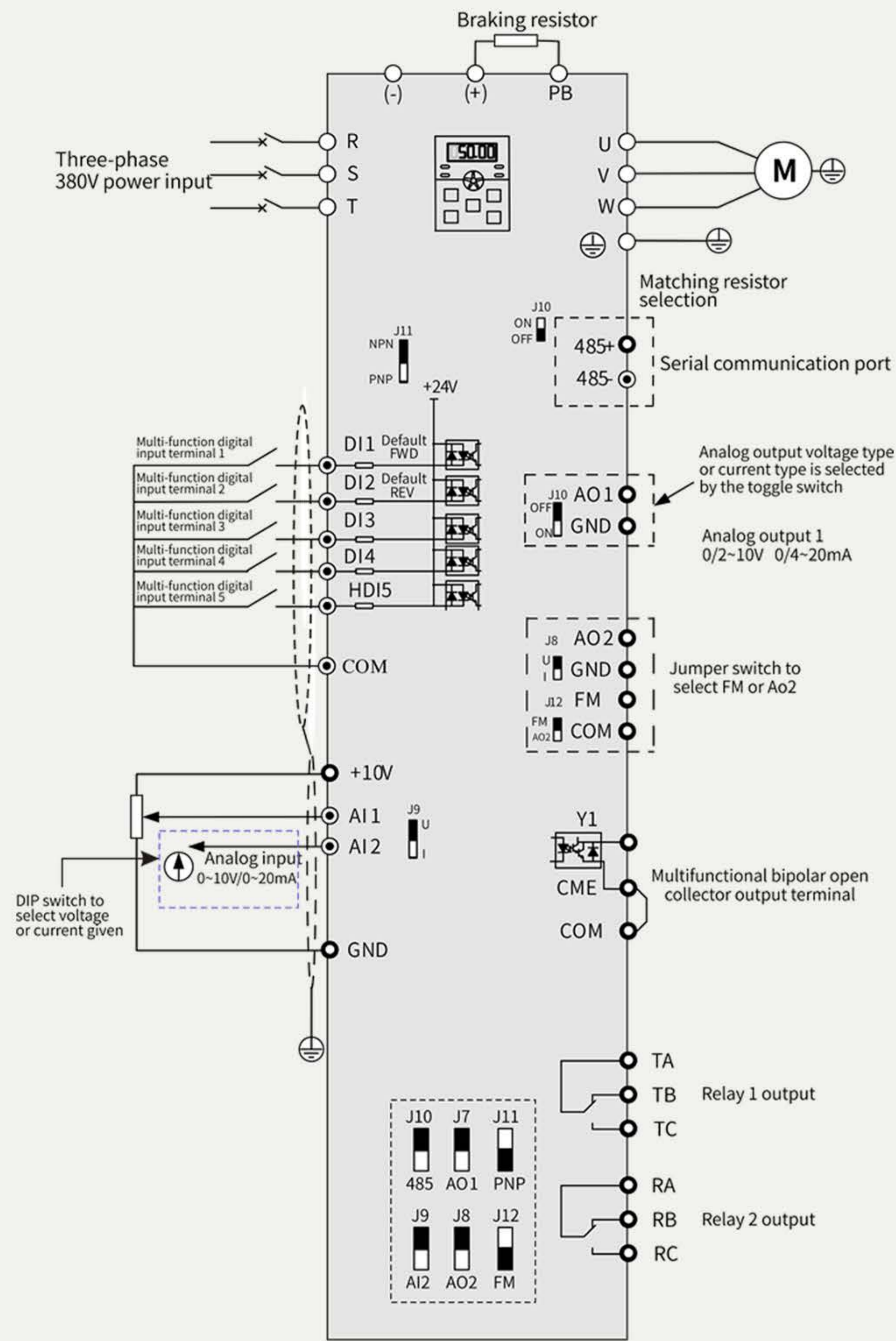
Schematic diagram of overall dimensions and installation dimensions of 30-132KW sheet metal chassis



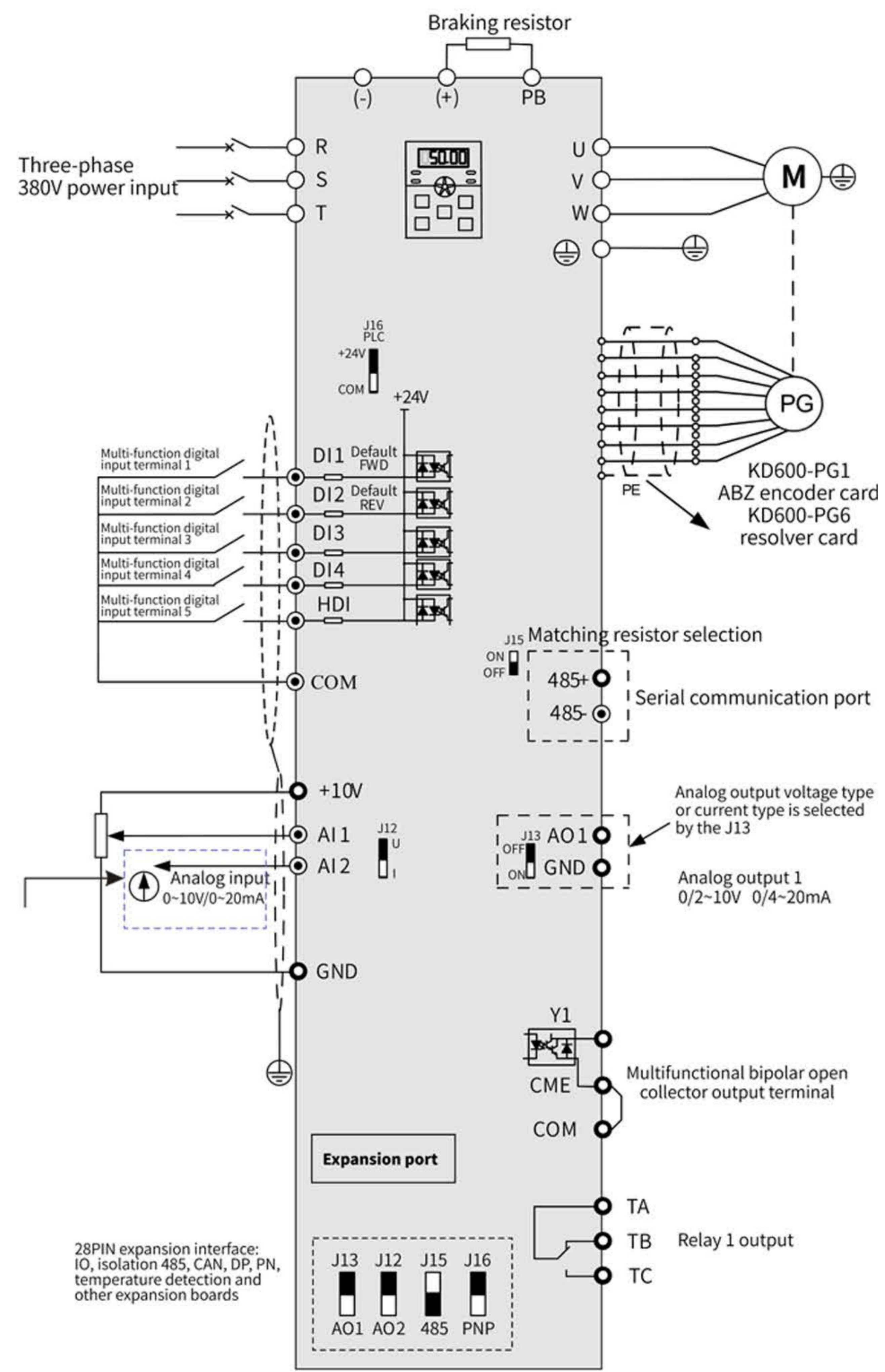
160KW Inverter Dimensions and Installation Dimensions

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>					
CTS180-2S-0.4G	0.4	5.4	2.3	76	156	165	86	140	5
CTS180-2S-0.7G	0.75	8.2	4.0						
CTS180-2S-1.5G	1.5	14.0	7.0						
<b>Input voltage: three-phase 380V</b>				<b>Range: -15%~20%</b>					
CTS180-4T-0.7G/1.5P	0.7	3.4	2.1	76	156	165	86	140	5
CTS180-4T-1.5G/2.2P	1.5	5.0	3.8						
CTS180-4T-2.2G/4.0P	2.2	5.8	5.1						
CTS180-4T-4.0G/5.5P	4.0	10.5	9.0	98	182	192	110	165	5
CTS180-4T-5.5G/7.5P	5.5	14.6	13.0						
CTS180-4T-7.5G/9.0P	7.5	20.5	17.0	111	223	234	123	176	6
CTS180-4T-9.0G/11P	9.0	22.0	20.0						
CTS180-4T-11G/15P	11	26.0	25.0	147	264	275	160	186	6
CTS180-4T-15G/18.5P	15	35.0	32.0						
CTS180-4T-18.5G/22P	18.5	38.5	37.0	174	319	330	189	186	6
CTS180-4T-22G/30P	22	46.5	45.0						
CTS180-4T-30G/37P	30	62.0	60.0	200	410	425	255	206	7
CTS180-4T-37G/45P	37	76	75						
CTS180-4T-45G/55P	45	92	91	245	518	534	310	258	10
CTS180-4T-55G/75P	55	113	110						
CTS180-4T-75G/90P	75	157	152	290	544	560	350	268	10
CTS180-4T-90G/110P	90	180	176						
CTS180-4T-110G/132P	110	214	210	320	678	695	410	295	10
CTS180-4T-132G/160P	132	256	253						
CTS180-4T-160G/185P	160	307	304	380	1025	1050	480	330	10
CTS180-4T-185G/200P	185	345	340						
CTS180-4T-200G/220P	200	385	380	500	1170	1200	590	365	14
CTS180-4T-220G/250P	220	430	426						
CTS180-4T-250G/280P	250	468	465	500	1255	1290	700	400	16
CTS180-4T-280G/315P	280	525	520						
CTS180-4T-315G/350P	315	590	585	500	1255	1290	700	400	16
CTS180-4T-350G/400P	350	665	650						
CTS180-4T-400G/450P	400	785	725	/	/	1800	1000	500	/
CTS180-4T-450G/500P	450	883	820						
CTS180-4T-500G/550P	500	920	900	/	/	1800	1000	500	/
CTS180-4T-550G/630P	550	1020	1000						
CTS180-4T-630G/710P	630	1120	1100	/	/	2200	1200	600	/
CTS180-4T-710G/800P	710	1315	1250						
CTS180-4T-800G/900P	800	1525	1450	/	/	2200	1200	600	/

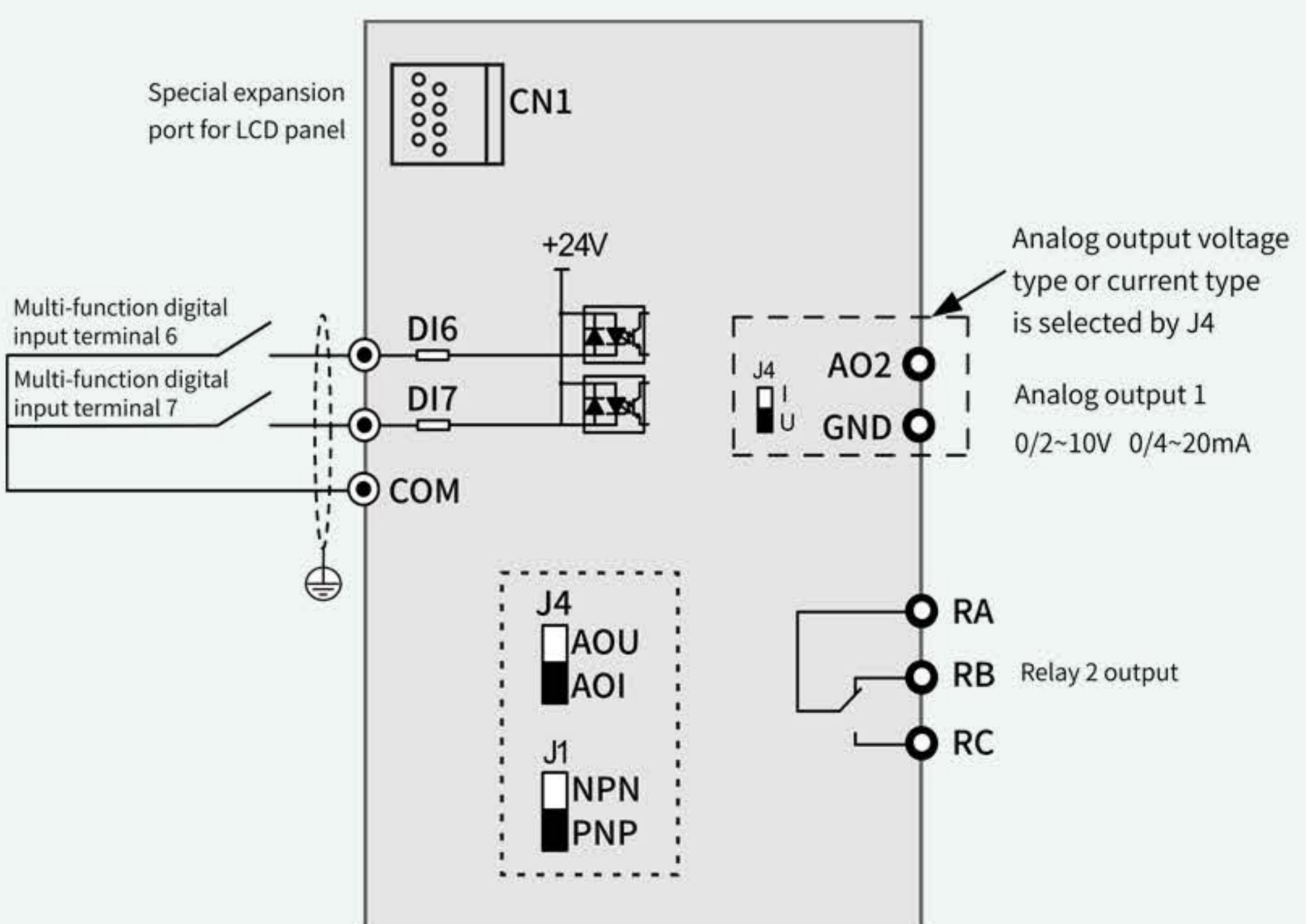
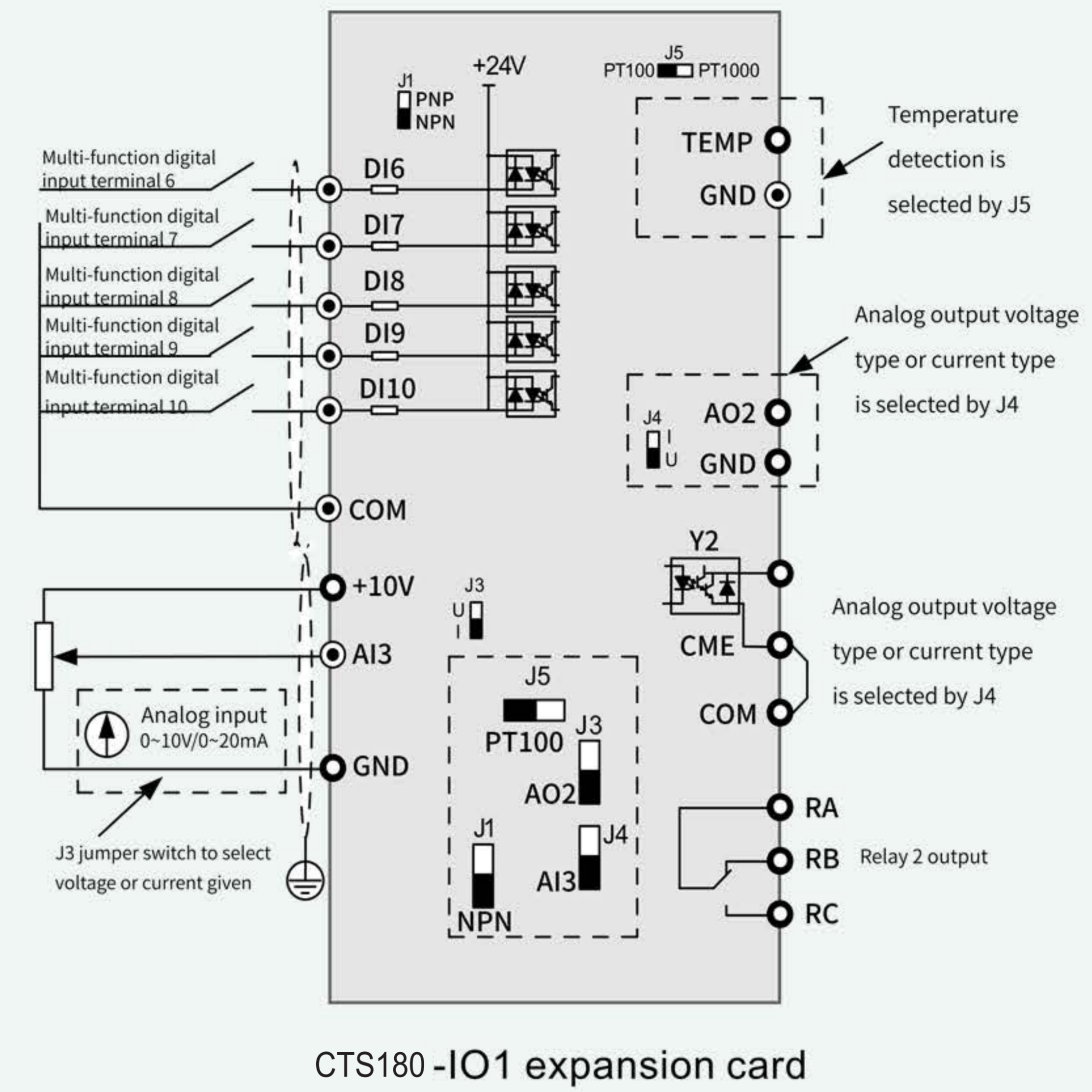
# BASIC WIRING DIAGRAM



Three-phase inverter below 2.2kW



(4T/7T) Three-phase inverter above 4.0kW



# APPLICATIONS

DETAILED CASE STUDY REFERENCE

# APPLICATION OF CTS180 VECTOR FREQUENCY CONVERTER IN COATING MACHINE

CTS180 series application (1)

## PARAMETER SETTING STEP

The coating machine needs to uniformly adhere glue or ink substances on the surface of aluminum foil, plastic film or cloth textile, which requires high coating process, not only requires uniform coating height, but also can achieve high-speed non-stop roll change to improve production efficiency.

## INTRODUCTION TO CONTROL REQUIREMENTS

The steps of the coating machine are generally divided into several links: constant tension unwinding, multi-level synchronous control of the coating process, and constant tension winding. In the normal production process, the substrate tension is required to be constant, the line speed is constant, and the start and stop processes are smooth. Therefore, in the control of the electro-mechanical properties of the coating machine, the key is to control the tension of the coating machine system. Because the size of the tension directly affects the quality and quantity of the product, if the tension is too large, it will destroy the physical properties of the coated paper and affect the service life and quality of the paper; it will affect the product quality of subsequent processes. In the whole process, regardless of startup acceleration, shutdown deceleration, and constant speed operation at any line speed, the coating roll, compound roll and traction roll are required to keep the running line speed synchronously, otherwise the paper will be broken and rewinding will shift. , aluminum foil folds or printing broken lines and other abnormalities. In this process link, the composite coating motor is required to have fast speed regulation response, accurate speed control and small tension fluctuation.

## CTS-Drive INVERTER SOLUTION

### Introduction to CTS-Drive vector inverter

CTS180 vector control inverter is a newly launched domestic high-grade inverter in recent years. There are mainly CTS180 universal vector inverter and CTS180 special vector inverter for tension control. CTS180 has powerful functions and can realize closed-loop vector control, which can meet the requirements of most industries for the function and performance of frequency converters. CTS180 is a special inverter controller for tension. It mainly integrates the special functions of tension control such as roll diameter calculation and tension taper, and realizes the simplification of tension control. Tension control of CTS180 has torque mode and speed mode. The occasions that require high tension control accuracy generally have the speed mode, and the occasions that do not require high tension control accuracy, the torque mode can be used, the system structure is simple and the debugging is convenient.

### Control points

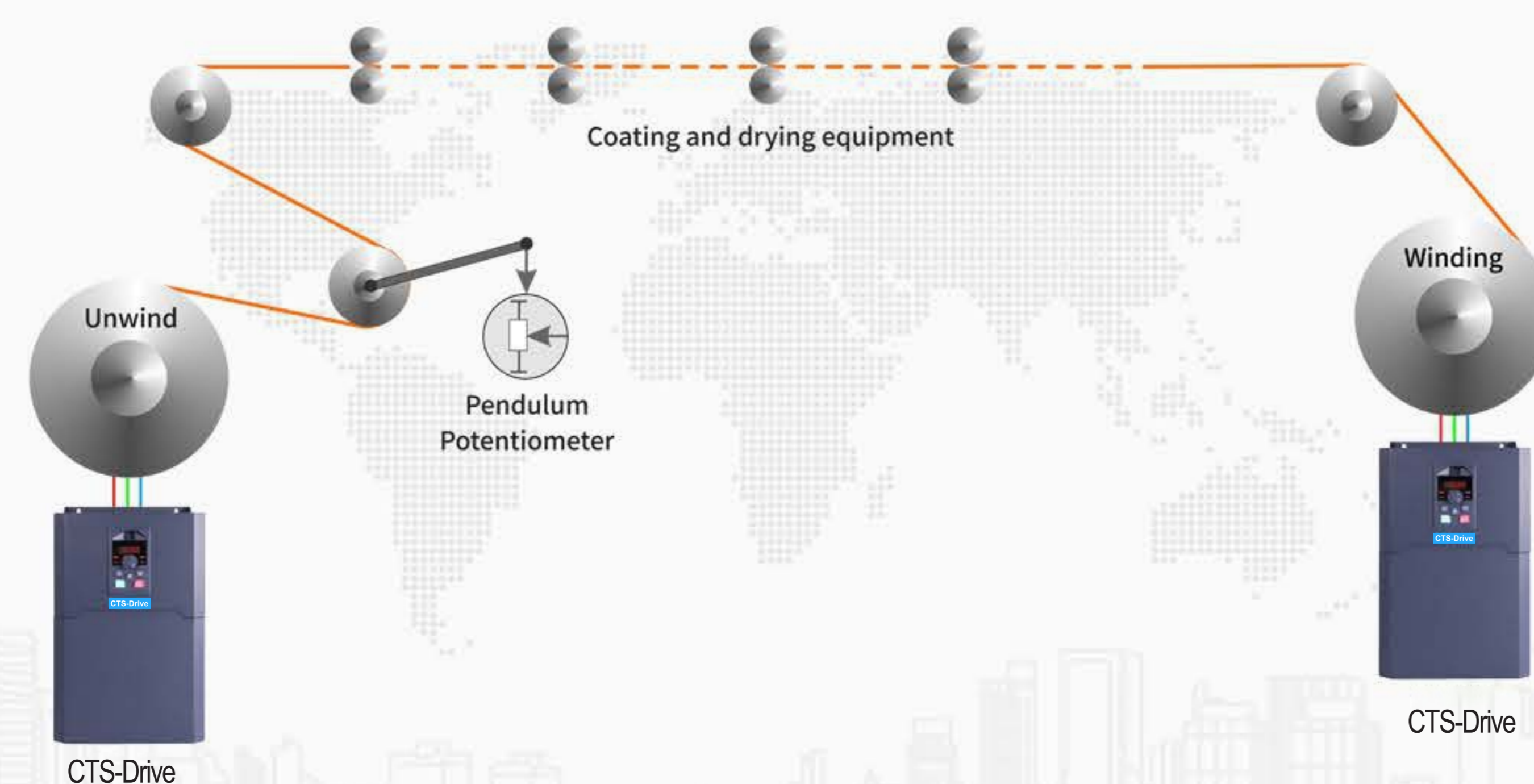
The linear speed of each segment is required to be constant, but because the coil diameter is constantly changing during the winding and unwinding process, the PID adjustment must consider the speed change caused by the change of the coil diameter, otherwise it will destroy the physical properties of the coated paper and affect the The service life and quality of the paper require high stability and precision, and the system responds quickly when it is dynamic.

## SOLUTION ADVANTAGE

1. The constant tension control and synchronous control are all completed by the frequency converter, no external controller is required, the electric control system adopts PLC control, and the structure is simple;
2. Constant tension control, the tension in the production process is very constant, the control precision is high, the substrate will not be damaged, the coating effect is uniform, and the product quality is good;
3. Through the adjustment of winding taper compensation, the winding tension of the finished product is constant, completely avoiding the situation of inner tightness and outer looseness;
4. The technology is mature, debugging, operation and maintenance are very convenient.

## STRUCTURE BRIEF

1. CTS180 series power take-up and pay-off inverter is needed in the unwinding stage of the base material. The main goal is to keep the tension of the base material constant. Automatic PID closed-loop control is adopted. When there is a disconnection, the take-up speed changes with the change of the release speed; when there is a disconnection, the pay-off reel is required to stop running immediately. Since the pay-off reel has a braking device, the inverter should be set to free stop when it stops, and the entire unwinding process is independent. run;
2. Multiple open-loop vector control inverters are required in the coating and drying stages, and proportional linkage control is adopted. During the production process of the coating machine, the main signal and the fine-tuning signal are superimposed. The realization method of line speed synchronization: take the multi-level synchronization control of multiple coating processes as an example, in order to realize the synchronization of line speed, the method of superposition of main frequency + auxiliary frequency is adopted. In synchronous control, the main frequency of the first inverter is transmitted to the second through RS485 communication, and so on, until the last inverter, the running frequency is transmitted through communication, which can avoid the attenuation of the analog signal during the transmission process. The auxiliary frequency of each inverter is the fine-tuning frequency of each inverter, which is realized by the up-/down running frequency of the inverter. Fine-tuning frequency accuracy up to 0.01Hz;
3. A CTS180 special frequency converter for tension control is required in the winding stage of the finished product. The main goal is to keep the tension of the finished product constant. Open-loop control is adopted to automatically calculate the taper and roll diameter without external tension devices. The rewinding stage performs a tracking run.



# APPLICATION OF CTS180 SERIES FREQUENCY CONVERTER ELECTRIC HOIST

CTS180 series application (2)

## INTRODUCTION

Single-beam cranes are commonly used equipment in industrial sites to realize the movement of goods in three-dimensional space. The operation in the two directions of the horizontal plane is completed by the large and the trolley respectively, and the operation in the vertical direction is handled by the lifting electric hoist mechanism. The electric hoist is a two-speed conical motor. If the current is too large, it is easy to cause damage to the motor and components, shorten the life of mechanical equipment, and require a large amount of maintenance. And the speed regulation characteristics are poor, and the debugging is not smooth enough.

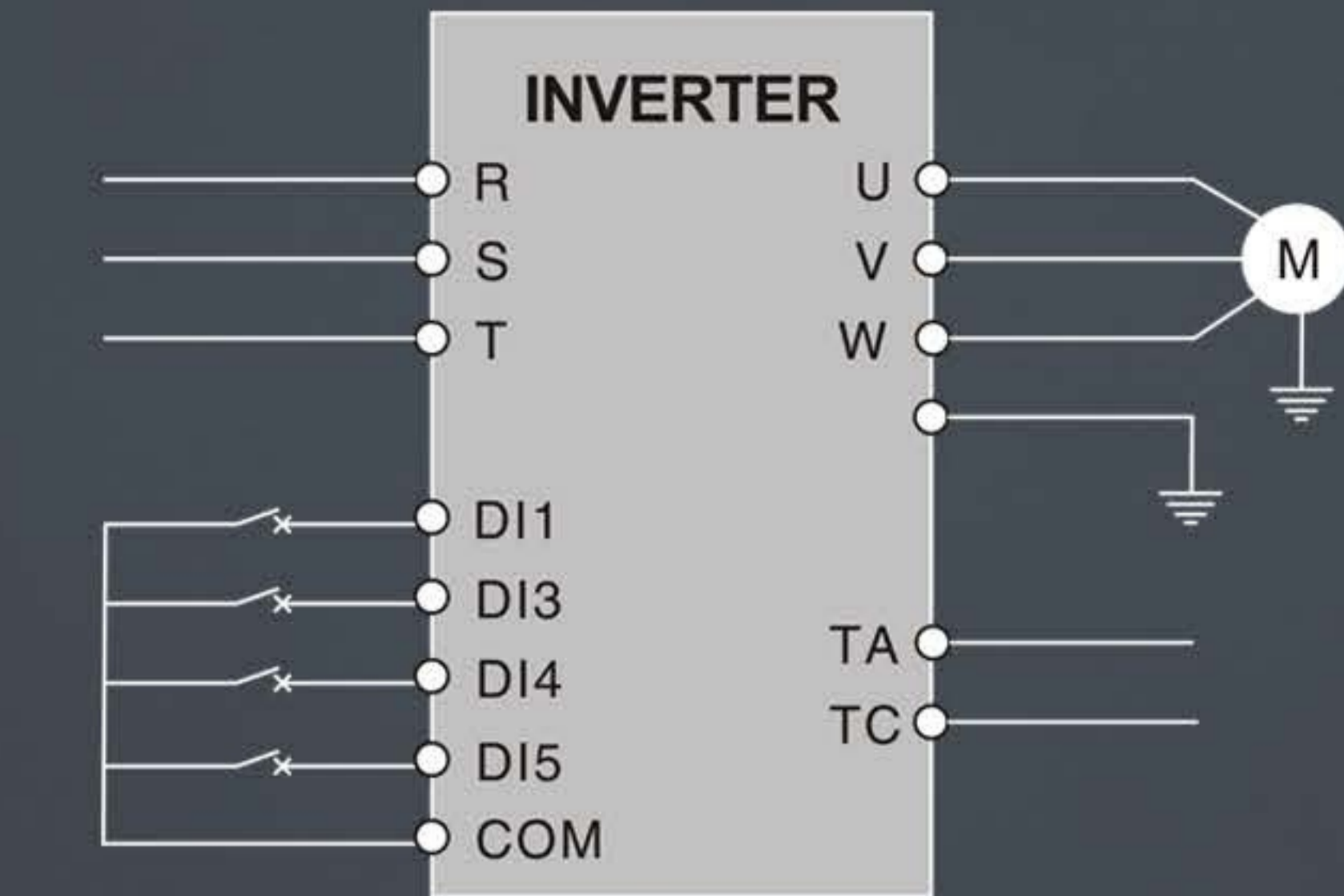
## ELECTRIC HOIST OPERATING CHARACTERISTICS

The crane hoisting mechanism has a large starting torque, which usually exceeds 150% of the rated torque. If overloading and other factors are considered, at least 200% of the rated torque should be provided during the start-up acceleration process;

When the hoisting mechanism runs downwards, the motor will be in the state of regenerative power generation and must be braked with energy consumption or regeneratively fed back to the grid;

When the lifting mechanism leaves or touches the ground, the load changes drastically, and the inverter should be able to smoothly control this impact load.

## SIMPLE WIRING DIAGRAM



## PARAMETER SETTING AND DESCRIPTION

Parameter	Name	Factory default	Set value	Remark
P0.04	Run command source	0	1	
P0.06	main frequency source	1	4	Multi-speed selection
P0.23	acceleration time	10	3	
P1.13	stop mode	0	1	slow down/free
P2.03	V/F curve setting	0	1	
P2.04	V/F frequency point P1	1.3	698	
P2.05	V/F voltage point V1	5.2	28	
P2.06	V/F frequency point P2	2.5	15	
P2.07	V/F voltage point V2	8.8	58	
P2.08	V/F frequency point P3	15	25	
P2.09	V/F voltage point V3	35	78	
P5.00	DI1 terminal function	1	1	
P5.02	DI3 terminal function	9	2	
P5.03	DI4 terminal function	12	12	
P5.04	DI5 terminal function	13	13	
PC.00	Multi-speed 0	0	100	
PC.01	Multi-speed 1	0	75	

## EFFECTIVENESS ANALYSIS

CTS180 series inverters carry out frequency conversion transformation of the driving system, and the transformation effect is ideal, mainly in:

1. Realize soft start and soft stop at startup, reducing the impact on the power grid;
2. After using the inverter, the original shift contactor and speed regulating resistor are omitted, which not only saves maintenance costs, but also reduces downtime and maintenance time, thereby increasing the output;
3. When the main hook works at 5Hz~30Hz, the energy saving effect is very obvious;
4. Improve the on-site process and save raw materials.

The inverter is used to control the front and rear walking, and the left and right walking mechanism series can realize overlocking work. On the premise of ensuring safety, the work efficiency is greatly improved, and the maintenance workload of the driving equipment due to the frequent replacement of the AC contactor is reduced.

## CTS180 SERIES PRODUCT FEATURES

1. Field-oriented current open-loop vector control, complete decoupling of motor variables, high low-frequency torque, fast response, etc.;
2. Select CTS180 to use PG-free open-loop vector control mode and vectorized V/F mode, and amplify the first power level configuration;
3. Frequency range: 0.5-600Hz segment setting, stepless continuous adjustment;
4. Operating voltage range: 380V ± 20%, the bus voltage is instantly as low as 360VDC and has no trouble running;
5. Overload capacity: 150% rated current, allow 1 minute; 200% rated current, allow 1 second;
6. Torque characteristics: starting torque, greater than 2 times rated torque; low frequency torque, greater than 1.6 times rated torque at 1Hz; braking torque greater than rated torque.

## APPLICATION CASE OF CTS180 SERIES INVERTER IN BRIDGE CRANE

CTS180 series application (3)

### INTRODUCTION

Overhead crane, commonly known as "travel", is a kind of hoisting machinery that is widely used in industrial and mining enterprises. Its operating mechanism is driven by three basically independent drag systems: cart drag system, trolley drag system and hook drag system. System composition, K-DRIVE inverter has successfully transformed the above three driving systems. The following mainly describes the transformation process of the front and rear travel systems in driving.

### OPERATING CHARACTERISTICS

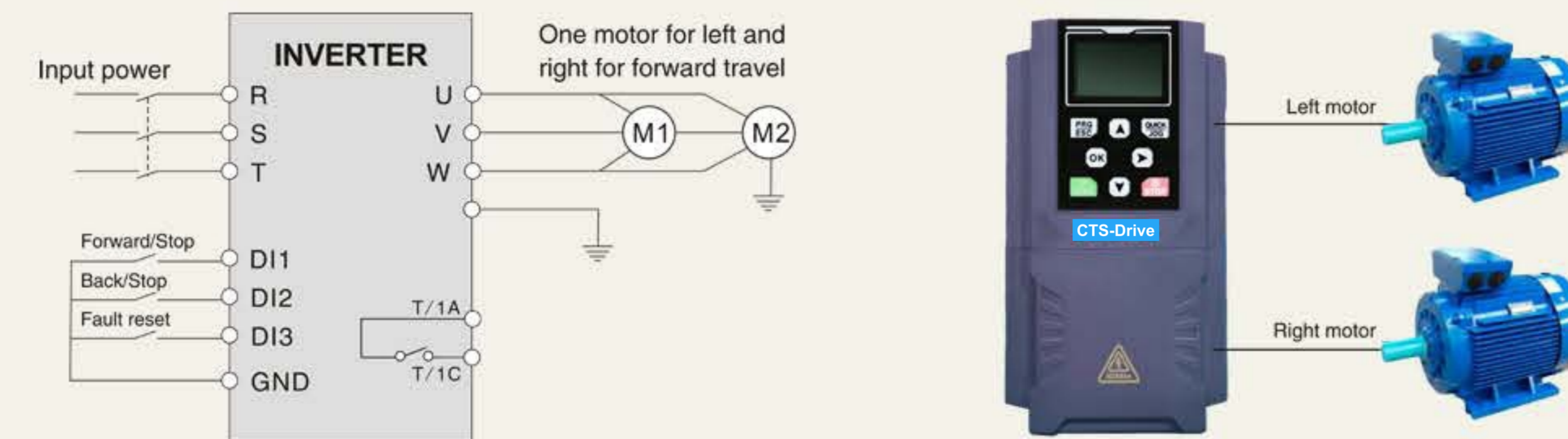
1. The traveling hoisting mechanism has a large starting torque, usually exceeding 150% of the rated torque. If overloading and other factors are considered, at least 200% of the rated torque should be provided during the starting and acceleration process;
2. When the hoisting mechanism runs downward, the motor will be in the state of regenerative power generation, and it must be subjected to energy consumption braking or regenerative feed-back to the grid;
3. The load of the hoisting mechanism changes drastically at the moment when the lifting heavy object leaves or touches the ground, and the inverter should be able to smoothly control this impact load;
4. For the front and rear travel mechanism of the vehicle, due to the mechanical design, the walking speed is not high, and the frequency converter can be used for proper overspeed to improve the work efficiency.



### FEATURES OF KD600 INVERTER

1. Field-oriented current open-loop vector control, complete decoupling of motor variables, high low-frequency torque, fast response, etc.;
2. Select CTS180 to use PG-free open-loop vector control mode and vectorized V/F mode, and amplify the first power level configuration;
3. Frequency range: 0.5-600Hz segment setting, stepless continuous adjustment;
4. Operating voltage range:  $380V \pm 20\%$ , the bus voltage is instantly as low as 360VDC and has no trouble running;
5. Overload capacity: 150% rated current, allow 1 minute; 200% rated current, allow 1 second;
6. Torque characteristics: starting torque, greater than 2 times rated torque; low frequency torque, greater than 1.6 times rated torque at 1Hz; braking torque greater than rated torque.

### SIMPLE WIRING DIAGRAM



### REFER TO PARAMETER SETTINGS AND DESCRIPTIONS (left and right motor walking parameters)

Parameter	Name	parameter settings	illustrate
P0.00=0	V/F Control	P5.00=1	Forward
P0.04=1	External terminal start and stop	P5.01=2	Back
P0.06=1	Digital frequency setting	P6.00=2	Relay 1 fault output
P0.14=60.00	Maximum frequency	P4.01=1.6KW	Connected motor power
P0.16=60.00	Upper limit frequency	P4.02=380V	Motor rated voltage
P0.11=60.00	Digital setting frequency	P4.04=3.3A	Motor rated current
P0.23=3.0S	Acceleration time	P4.05=50Hz	Motor rated frequency
P0.24=2.0S	Deceleration time	P4.06=960R/MIN	Motor rated speed

**Note:**  
When using one inverter with two motors, it is strongly recommended to install a matching thermal relay at the front end of each motor to protect each motor.

### RUNNING EFFECT ANALYSIS

CTS180 series inverters carry out frequency conversion transformation of the driving system, and the transformation effect is ideal, mainly in:

1. Realize soft start and soft stop at startup, reducing the impact on the power grid;
2. After using the inverter, the original shift contactor and speed regulating resistor are omitted, which not only saves maintenance costs, but also reduces downtime and maintenance time, thereby increasing the output;
3. When the main hook works at 5Hz~30Hz, the energy saving effect is very obvious.

### CONCLUDING REMARKS

The inverter is used to control the front and rear walking, and the left and right walking mechanism series can realize overlocking work. On the premise of ensuring safety, the work efficiency is greatly improved, and the maintenance workload of the driving equipment due to the frequent replacement of the AC contactor is reduced.



## APPLICATION OF CTS180 SERIES INVERTER IN CONSTRUCTION ELEVATOR SITE

CTS180 series application (4)

### INTRODUCTION

The construction hoist is an indispensable and important construction equipment that cooperates with the large tower crane in the modern high-rise construction. Especially in the construction of high-rise and super high-rise buildings, it plays an extremely important role in ensuring the construction period and safety, reducing construction costs and reducing labor intensity. At the same time, it is also an important symbol of the equipment level of the construction team. According to general equipment experience, each tower crane for high-rise is equipped with at least one construction hoist. The traditional construction ladder adopts the relay-contactor control mode, direct start and forced braking of mechanical brake, which has large impact on starting and braking and poor comfort, which greatly affects the service life of the mechanical structure. Judging from the development in recent years, the frequency conversion construction ladder has become the development trend of the industry.

### APPLICATION SITE

The application site is a construction site, and the on-site construction ladder transmission mechanism is a 3-motor worm gear transmission system. Electromagnetic brake three-phase asynchronous motor, the specific motor parameters are: 11KW 380V 24A 50Hz 1390RPM. The inverter model is configured with a rated power of 37KW and a rated output current of 75A. The pictures of the scene are as follows:



### SYSTEM DEBUGGING

A running cycle of hoisting machinery is divided into five processes: startup, acceleration, running, deceleration, and parking. In the start-up stage, the driver is required to have a large output torque, so that the equipment starts smoothly and does not slip. The time to open the brake should be appropriate. The time to open the brake is too early, and the machine does not have enough torque to drive the operation of the equipment. Under the action of gravity, the machine slides down. If the time to open the brake is too late, the machine has a large torque output. After the brake is opened, the acceleration is too large and the start is not stable. In the acceleration and deceleration stages, the speed change is required to be smooth, and the acceleration should not be too large. Equipment such as construction elevators will make people feel overweight or weightless. During the smooth running stage, the machine should maintain a constant output and the running speed should be close to a uniform motion. The difference between going up and going down is that when going up, the device needs to overcome the gravity of the object to provide upward traction; when going down, it needs to balance a part of the influence of gravity to make the device descend and balance.

Common parameters are as follows:

Parameter	Name	Set value	Remark
P0.03	Control method	0	Open Loop Vector Control 1
P0.04	Command source selection	1	Terminal command channel
P0.06	Main frequency source X selection	4	Analog given (set according to the actual situation)
P0.23	Acceleration time 1	3s	
P0.24	Deceleration time 1	2s	
P4.01	Motor rated power	Model is determined	Set corresponding to the actual value of the motor, for example: one-drive-three is 11KW, then the rated power of the motor is set to: 11*3=33KW
P4.03	Number of motor poles		
P4.04	Motor rated current		
P5.00	DI1 terminal function selection	1	Forward running (FWD)
P5.01	DI2 terminal function selection	2	Reverse operation (REV)
P6.00	Relay 1 output selection	18	Lifting equipment brake frequency output
P6.01	Relay 2 output selection	2	Fault relay output
PE.00	Forward rotation (DI1 on) open the brake frequency	1.50Hz	Frequency when DI1 is on (default forward) when the brake is open
PE.01	Forward rotation (DI1 on) turn-on delay	0.0s	DI1 is connected (default forward) brake open delay
PE.02	Forward rotation (DI1 is turned on) close the brake frequency	1.30Hz	The frequency when DI1 is connected (default forward) and the brake is closed
PE.03	Forward rotation (DI1 on) off delay	0.0s	DI1 on (default forward) brake off delay
PE.04	Reverse (DI2 on) open the brake frequency	1.50Hz	Frequency when DI2 is on (reverse by default) when the brake is open
PE.05	Reverse (DI2 on) turn-on delay	0.0s	DI2 on (default reverse) brake open delay
PE.06	Reverse (DI2 on) close the brake frequency	-1.50Hz	Frequency when DI2 is on (default reverse) when the brake is off
PE.07	Reverse (DI2 ON) OFF delay	0.0s	DI2 on (default reverse) brake off delay
PE.08	Is the brake torque feedback protection function valid?	0: invalid 1: Valid	Used to detect whether the torque reaches the PE.09 value when the brake is opened

### PRODUCT ADVANTAGES

1. High starting torque: low-frequency starting torque is large, and 0.5Hz can reach 180% of the rated torque;
2. Multiple protection mechanisms: brake short-circuit protection, braking resistor short-circuit protection, motor overheating, overload protection, etc.;
3. Simple and easy to use: the parameters do not need to be debugged, and they can be used immediately after booting;
4. Intelligent integration: integrates overload protection, voice broadcast, and status indication panel;
5. Safety: The variable frequency speed regulation system has fault protections such as under-voltage, overvoltage, overtorque, and overcurrent protection, which ensures the reliability and safety of the entire electronic control system. Since the system brakes at zero speed and the brake has no relative rotational friction, the service life is theoretically infinite, and in fact it is at least ten times longer.



# APPLICATION CASE OF CTS180 SERIES INVERTER IN OPEN-LOOP TORQUE

CTS180 series application (5)

## WIRING METHOD

1. Main circuit: R, S, T are connected to the three-phase input voltage source (note the voltage level: 220V, 380V), U, V, W are connected to the three-phase asynchronous motor, and PE is connected to the standard earth.
2. The torque is controlled by an external potentiometer: AI1 is used to control the torque.

## DEBUG STEPS

1. After restoring all parameters to the factory default value P0.28=1, input the accurate motor parameters, P4.01~P4.05 (5 important parameters);
2. Carry out dynamic self-learning of motor parameters, P4.00=2, (note: during dynamic learning, it is necessary to ensure that the motor shaft is idling, and cannot be loaded or belt or reducer and other transmission mechanisms), at this time, the most connected real If there is no other way, then perform static self-learning, P4.00=1.



## PARAMETER SETTING SITUATION

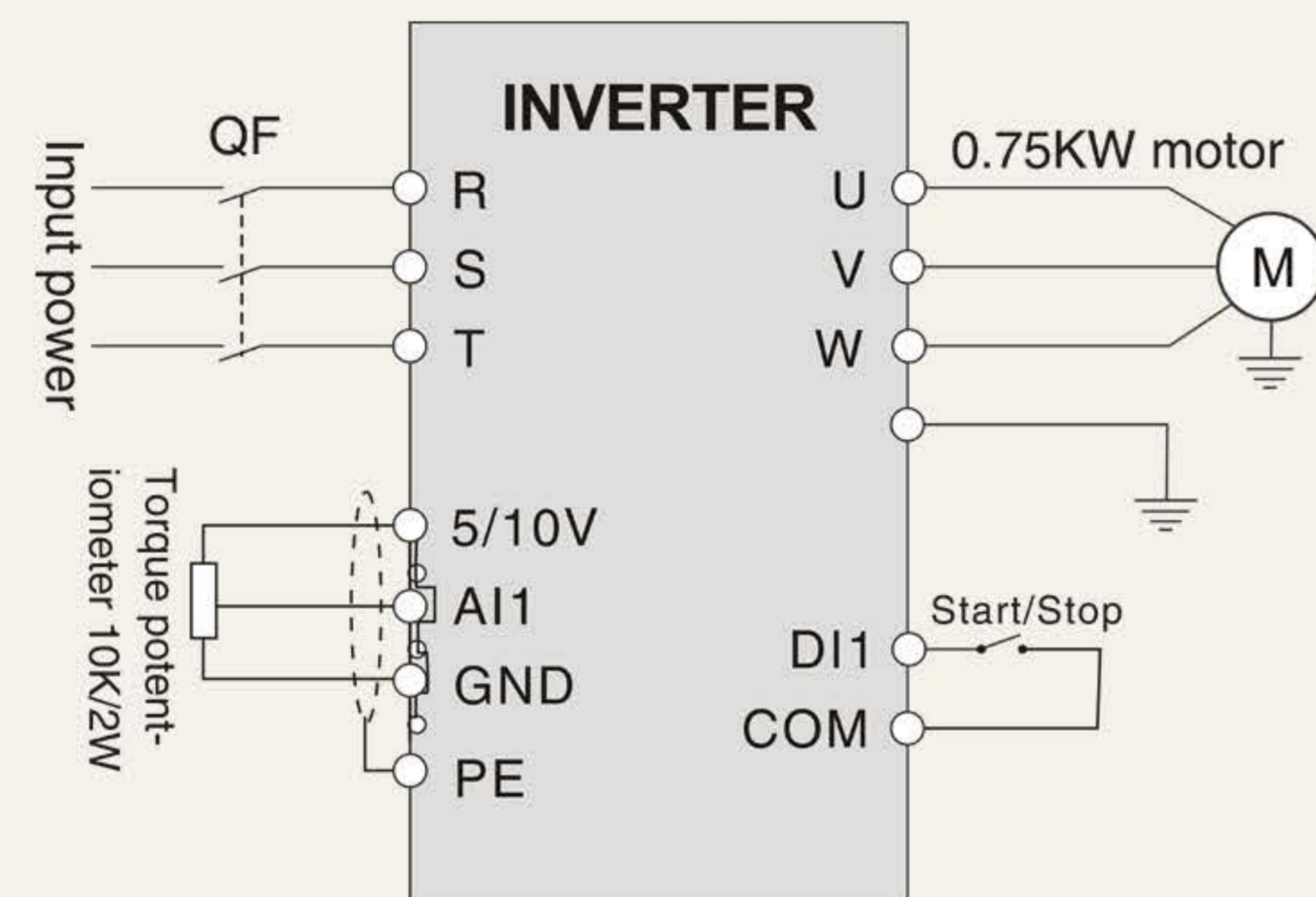
### 1. Self-learning of motor parameters

Parameter	Name	Illustrate
P0.04=0.75KW	Connected motor rated power	Please refer to the input corresponding to the actual motor parameters, and pay attention to the connection method of the motor; when self-learning the motor parameters, it is best to carry out dynamic self-learning (the motor shaft is idling, without the chain, reducer, belt, etc., and can not be loaded. Self-learning)
P4.02=380V	Motor rated voltage	
P4.04=2.05A	Motor rated current	
P4.05=50Hz	Motor rated frequency	
P4.06=1380RPM	Motor rated speed	P4.00=2 is dynamic self-learning, and 1 is static self-learning.

### 2. Torque control setting

Parameter	Name	Parameter settings	illustrate
P0.03=01	No PG Vector Mode (SVC)	PD.00=1	Torque setting source is given by Ai1
P0.04=1	External terminal start and stop	PD.01=100%	Torque digital setting in torque control mode and (when A0.01=1, 100% of them correspond to PD.01, which is subject to the upper limit of this function code)
PD.10=1	Select torque control method	PD.14=60	Maximum frequency
PD.16=60	Upper limit frequency	PD.07=0 PD.08=0	Torque acceleration and deceleration time

## BASIC WIRING DIAGRAM



SYNCHRONIZED  
INDUSTRY

TENSION  
CONTROL  
INDUSTRY

TORQUE  
INDUSTRY

BRAKE  
INDUSTRY

WINDING  
INDUSTRY



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Industrial Automation & Drives

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