Operation manual

KDE300A Series

High Performance Universal Inverter

Preface

Thank you for purchasing the KDE300A series high performance vector and torque control frequency inverter

KDE300A series Performance higher level than KDE300 frequency inverterwith advanced functions, such as high performance vector control of induction motor, user-programmable function and backstage monitoring software, variable communication and supporting multiple PG cards etc. It is applicable to textile, papermaking, tension control, wire drawing fans and pumps, machine tools, packaging, food and all kinds of automatic production equipment.Its excellent performance is equivalent and competitive to most of international brand AC drives

This manual introduces functional characteristics and usage of KDE300A series inverter, includes product model selection, parameter settings, running and debugging, maintenance, checking, and so on. Please be sure to read this manual carefully before operation. For equipment matching manufacturers, please send this manual to your end user together with your devices, in order to facilitate the usage.

PRECAUTIONS
◆ To describe the product details, the illustrations in the manual sometimes are under the state of removing the outer housing or security covering. While using the product, please be sure to mount the housing or covering as required, and operate in accordance with the contents of manual. ◆ The illustrations in this manual is only for explanation, may be different from the products you ordered. ◆ committed to constantly improving the products and features will continue to upgrade, the information provided is subject to change without notice. ◆ Please contact with the regional agent or client service center directly of factory if there is any questions during usage.

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Contents

Chapter 1 Safety Information and Precautions

Safety Definitions: In this manual, safety precautions are divided into the following two categories:

 indicates that failure to comply with the notice will result in serous injury or even death

 indicates that failure to comply with the notice will result in moderate or minor injury andequipment damage

Read this manual carefully so that you have a thorough understanding. Installation, commissioning or maintenance may be performed in conjunction with this chapter. will assume no liability or responsibility for any injury or loss caused by improper operation.

1.1 Safety Precautions

Use stage	Security Level	Precautions
Before Installation	 DANGER	➢ packing water, parts missing or damaged parts, please do not install! ➢ Packaging logo and physical name does not match, please do not install!
	 WARNING	➢ Handling should be light lift, otherwise there is the danger of damage to equipment! ➢ Do not use damaged drive or missing drive. Risk of injury! ➢ Do not touch the control system components by hand, or there is the danger of electrostatic damage!
During Installation	 DANGER	➢ Please install the flame retardant objects such as metal, away from combustibles, or may cause a fire!
	 WARNING	➢ Do not allow lead wires or screws to fall into the drive, otherwise the drive may be damaged! ➢ Install the drive in a place where there is less vibration and direct sunlight. ➢ Drive placed in airtight cabinet or confined space, please note the installation of space to ensure the cooling effect.
Wiring	 DANGER	➢ You must follow the guidance of this manual and be used by qualified electrical engineers. Otherwise, unexpected danger may occur! ➢ There must be a circuit breaker between the drive and the power supply, otherwise a fire may occur! ➢ Make sure the power supply is in zero-energy state before wiring, otherwise there is danger of electric shock! ➢ Please follow the standard to the drive properly grounded, otherwise there is the risk of electric shock!
	 WARNING	➢ Never connect input power to the drive's output terminals (U, V, W). Note that the terminal markings, do not take the wrong line! Otherwise it will cause damage to the drive! ➢ Never connect the braking resistor directly to the DC bus +, - terminals. Otherwise it will cause a fire! ➢ Refer to the manual's recommendations for the wire diameter used. Otherwise it may happen accident! ➢ Do not disassemble the connecting cable inside the driver. Otherwise, the internal of the servo driver may be damaged.
Before Power-on	 DANGER	➢ Make sure the voltage level of the input power is the same as the rated voltage of the driver. Check if the wiring position of the power input terminals (R, S, T) and output terminals (U, V, W) is correct; Of the external circuit is short-circuited, the connection is tightened, or cause

Use stage	Security Level	Precautions
		damage to the drive! ➢ No part of the drive need to withstand voltage test, the product has been made before the test. Otherwise it may cause accident!
	 WARNING	➢ The driver must be covered before the cover can be powered, otherwise it may cause electric shock! ➢ All peripheral accessories must be wired according to the instructions in this manual, and be properly wired in accordance with this manual. Otherwise it may cause accident!
After Power-on	 DANGER	➢ Do not open the cover after power on, otherwise there is danger of electric shock! ➢ If the indicator light does not light after power on, the keyboard does not display the situation, immediately disconnect the power switch, do not touch any input and output terminals of the drive, otherwise there is the risk of electric shock!
	 WARNING	➢ If parameter identification is required, preclude the possibility of injury when rotating the motor! ➢ Do not arbitrarily change the drive manufacturer parameters, or it may cause damage to the device!
During Operation	 DANGER	➢ Do not touch the cooling fan, radiator and discharge resistance to test the temperature, otherwise it may cause burns! ➢ Non-professional technicians Do not detect the signal during operation, otherwise it may cause personal injury or equipment damage!
	 WARNING	➢ Drive operation, should avoid something falling into the device, otherwise it will cause damage to the device! ➢ Do not use the contactor on-off method to control the start and stop the drive, otherwise it will cause damage to the equipment!
Maintenance	 DANGER	➢ Do not live on the equipment repair and maintenance, or there is a risk of electric shock! ➢ Turn off the input power for 10 minutes before performing maintenance and repair on the drive, otherwise the residual charge on the capacitor will cause harm to people! ➢ Do not carry out maintenance and repair on the drive without personnel who have been professionally trained, otherwise personal injury or equipment damage will occur! ➢ All pluggable plug-ins must be unplugged in the case of power failure! ➢ The parameters must be set and checked after replacing the drive.
	 WARNING	➢ Before performing maintenance work on the drive, make sure that the motor is disconnected from the drive to prevent the motor from feeding back power to the drive due to accidental rotation.

1.2 Precaution

- **Contactor using**

  If the contactor is installed on the power input side of the inverter, do not make the contactor frequent on-off operation. The interval between ON and OFF of the contactor should not be less than one hour. Frequent charging and discharging will reduce the use of capacitors in the inverter life.
  If a contactor is installed between the inverter output terminals (U, V, W) and the motor, make sure that the inverter is turned on and off when there is no output. Otherwise, the inverter may be damaged.

- **Lightning impulse protection**

  Although this series of inverters are equipped with lightning over-current protection device, there is a certain degree of self-protection for inductive lightning, but for lightning frequent place, customers should also install lightning protection device in the front of the inverter.

- **Altitude and derating use**
  In areas above 1000m above sea level, it is necessary to derate the inverter due to poor air quality due to poor air quality. In this case, please consult our company.

- **Power input**
  The inverter power input should not exceed the operating voltage range specified in this manual. If necessary, use a step-up or step-down device to change the power supply to the specified voltage range.
  Do not change the three-phase inverter to two-phase input, otherwise it will cause malfunction or inverter damage.

- **Output filtering**
  When the cable length between the inverter and the motor exceeds 100 meters, it is suggested to use the output AC reactor to avoid inverter over-current caused by excessive distributed capacitance. Output filter according to the needs of the field matching.
  Inverter output is PWM wave, please do not install the capacitor on the output side to improve the power factor or lightning varistor, etc., otherwise it may easily lead to inverter instantaneous overcurrent or even damage the inverter.

- **About motor heat and noise**
  Because the inverter output voltage is PWM wave, contains a certain degree of harmonics, so the motor temperature rise, noise and vibration compared with the same frequency operation will be slightly increased.

- **Disposal**
  Electrolytic capacitors on the main circuit and electrolytic capacitors on the printed circuit board may explode when incinerated, and poisonous gases are generated when plastic parts are burned. Please dispose as industrial waste.

- **The scope of application**

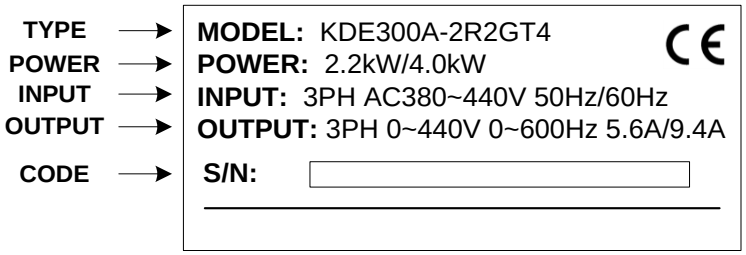
This product is not designed and manufactured for use on equipment where life is at stake. To use this product on a mobile, medical, aerospace, nuclear or other special purpose device, please contact our company For more information.

This product is manufactured under strict quality control and should be equipped with a safety device if it is used in a device that may cause a serious accident or damage due to inverter failure.

Chapter 2 Product Information

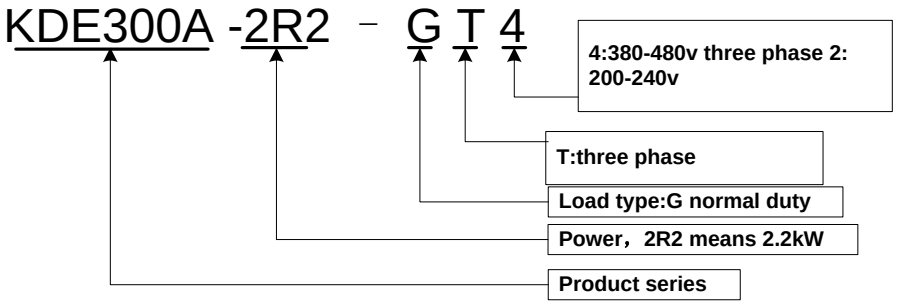
2.1 Designation Rules

Name plate：



2-1 name plate

Model instruction：



2-2model instruction

2.2product series instruction

Table 2-1 KDE300A inverter models and technical data

Model	Power capacity (KVA)	Input current (A)	Output current(A)		Adaptable Motor (KW)	SIZE	Brake Unit
			Heavy load	Light load			
Single phase: 200-240V，50/60Hz							
KDE300A-R75GS2	1.5	8.2	4.0	7.0	0.75	SIZE A	Inbuilt
KDE300A-1R5GS2	3	14	7.0	9.6	1.5		
KDE300A-2R2GS2	4	23	9.6	17.0	2.2		
Three phase: 380-480V，50/60Hz							
KDE300A-R75GT4	1.5	3.4	2.1	4.0	0.75	SIZE A	Inbuilt
KDE300A-1R5GT4	3	5	3.8	5.6	1.5		
KDE300A-2R2GT4	4	5.8	5.1	9.0	2.2		
KDE300A-3R7G/5R5PT4	5.9	10.5	9.0	13.0	3.7	SIZE B	
KDE300A-5R5G/7R5PT4	8.9	14.6	13.0	17.0	5.5		
KDE300A-7R5G/011PT4	11	20.5	17.0	25.0	7.5		
KDE300A-011G/015PT4	17	26.0	25.0	32.0	11	SIZE C	

KDE300A-015G/018PT4	21	35.0	32.0	37.0	15		
KDE300A-018G/022PT4	24	38.5	37.0	45.0	18.5		
KDE300A-022G/030PT4	30	46.5	45.0	60.0	22	SIZE D	option
KDE300A-030G/037PT4	40	62.0	60.0	75.0	30		
KDE300A-037G/045PT4	57	76.0	75.0	90.0	37	SIZE E	
KDE300A-045G/055PT4	69	92.0	91.0	110.0	45		
KDE300A-055G/075PT4	85	113.0	112.0	152.0	55	SIZE F	
KDE300A-075G/090PT4	114	157.0	150.0	176.0	75		
KDE300A-090G/110PT4	134	180.0	176.0	210.0	90	SIEZ G	External
KDE300A-110G/132PT4	160	214.0	210.0	253.0	110		
KDE300A-132G/160PT4	192	256.0	253.0	304.0	132	SIZE H	
KDE300A-160G/200PT4	231	307.0	304.0	357.0	160	SIZE I	
KDE300A-200G/220PT4	250	385.0	377.0	426.0	200		
KDE300A-220G/250PT4	280	430.0	426.0	465.0	220	SIZE J	
KDE300A-250G/280PT4	355	468.0	465.0	520.0	250		
KDE300A-280G/315PT4	396	525.0	520.0	585.0	280		
KDE300A-315G/355PT4	445	590.0	585.0	650.0	315	SIZE K	
KDE300A-355G/400PT4	500	665.0	650.0	725.0	355		
KDE300A-400G/450PT4	565	785.0	725.0	820.0	400		
KDE300A-450G/500PT4	630	790.0	820.0	860.0	450		
KDE300A-500G/560PT4	700	835.0	860.0	950.0	500	SIZE L	external
KDE300A-560G/630PT4	784	920.0	950.0	1100.0	560		

2.3Technical Specifications

Table 2-2 KDE300A Technical Specifications

Item		Specifiation
Input	Inuput Voltage	1phase/3phase 220V：200V～240V 3 phase 380V-480V：380V～480V
	Allowed Voltage fluctuation range	-15%～10%
	Input frequency	50Hz / 60Hz，fluctuation less than 5%
Output	Output Voltage	3phase：0～input voltage
	Overload capacity	General purpose application：60S for 150% of the rated current Light load application：60S for 120% of the rated current
Control	Control mode	V/f control Sensorless flux vector control without PG card（SVC） Sensor speed flux vector control with PG card (VC)
	Operating mode	Speed control、Torque control（SVC and VC）
	Speed range	1:100 (V/f) 1:200(SVC) 1:1000 (VC)

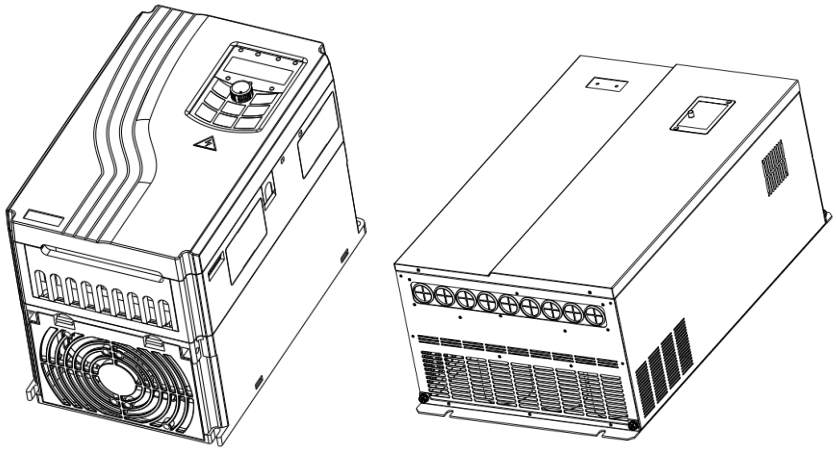
	Speed control accuracy	±0.5% (V/f) ±0.2% (SVC) ±0.02% (VC)
	Speed response	5Hz(V/f) 20Hz(SVC) 50Hz(VC)
	frequency range	0.00～600.00Hz(V/f) 0.00～200.00Hz(SVC) 0.00～400.00Hz(VC)
	Input frequency resolution	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.1%
	Startup torque	150%/0.5Hz(V/f) 150%/0.25Hz(SVC) 150%/0Hz(VC)
	Torque control accuracy	SVC：within 5Hz10%，above 5Hz5% VC:3.0%
	V/f curve	V / f curve type: straight line, multipoint, power function, V / f separation; Torque boost support: Automatic torque boost (factory setting), manual torque boost
	Frequency giving ramp	Support linear and S curve acceleration and deceleration; 4 groups of acceleration and deceleration time, setting range 0.00s ~ 60000s
	DC bus voltage control	VdcMax Control: Limit the amount of power generated by the motor by adjusting the output frequency to avoid over-voltage trip; VdcMin control: Control the power consumption of the motor by adjusting the output frequency, to avoid jump undervoltage fault
	Carrier frequency	1kHz～12kHz(Varies depending on the type)
	Startup method	Direct start (can be superimposed DC brake); speed tracking start
	Stop method	Deceleration stop (can be superimposed DC braking); free to stop
	Main control function	Jog control, droop control, up to 16-speed operation, dangerous speed avoidance, swing frequency operation, acceleration and deceleration time switching, VF separation, over excitation braking, process PID control, sleep and wake-up function, built-in simple PLC logic, virtual Input and output terminals, built-in delay relay, built-in comparison unit and logic unit, parameter backup and recovery, perfect fault record, fault reset, two groups of motor parameters freely switch, software swap output wiring, terminals UP / DOWN
function	Keypad	LED Digital keyboard
	communication	Standard: MODBUS communication
	PG card	Incremental Encoder Interface Card (Differential Output and Open Collector), Resolver Interface Card
	Input terminal	standard: 5 digital input terminals, one of which supports high-speed pulse inpu up to 50kHz; 2 analog input terminals, support 0 ~ 10V voltage input or 0 ~ 20mA current input;
	Output terminal	standard: 1 digital output terminal; 1 high-speed pulse output terminal (open collector type), support 0 ~ 50kHz square wave signal output; 1 relay output terminal 2 analog output terminals, support 0 ~ 20mA current output or 0 ~ 10V voltage output;
Protection	Refer to Chapter 6 "Troubleshooting and Countermeasures" for the protection function	
Environment	Installation	Indoor, no direct sunlight, dust, corrosive gas, combustible gas, oil

	location	smoke, vapor, drip or salt.
	Altitude	Lower than 1000 m
	Ambient temperature	-10°C~ +40°C (derated if the ambient temperature is between 40°C and 50°C)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9 m/s^2 (0.6 g)
	Storage temperature	-20°C ~ +60°C
others	Installation	Wall-mounted, floor-controlled cabinet, transmural
	Protection level	IP20
	cooling method	Forced air cooling

Chapter 3 Product appearance and Installation Dimension

3.1 Product appearance and installation

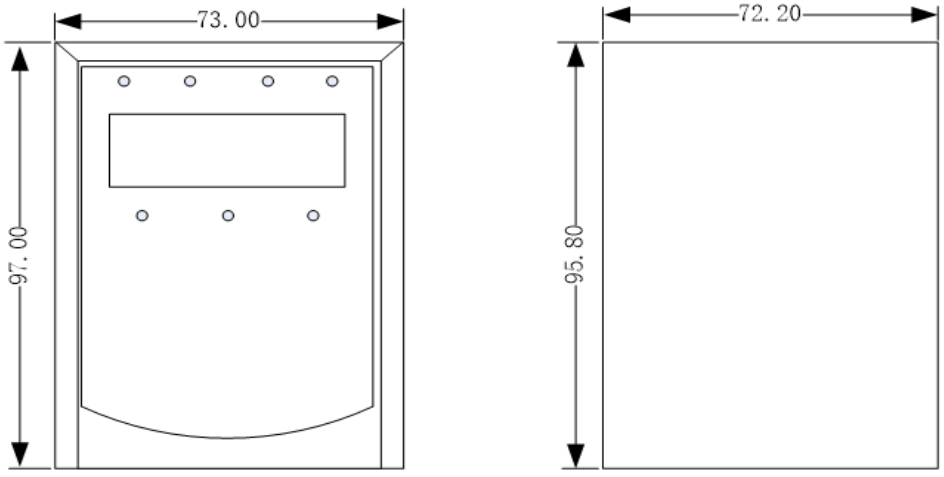
3.1.1Product appearance



(a) SIZE A～SIZE C(plastic)appearance (b) SIZE D and above(metal) appearance

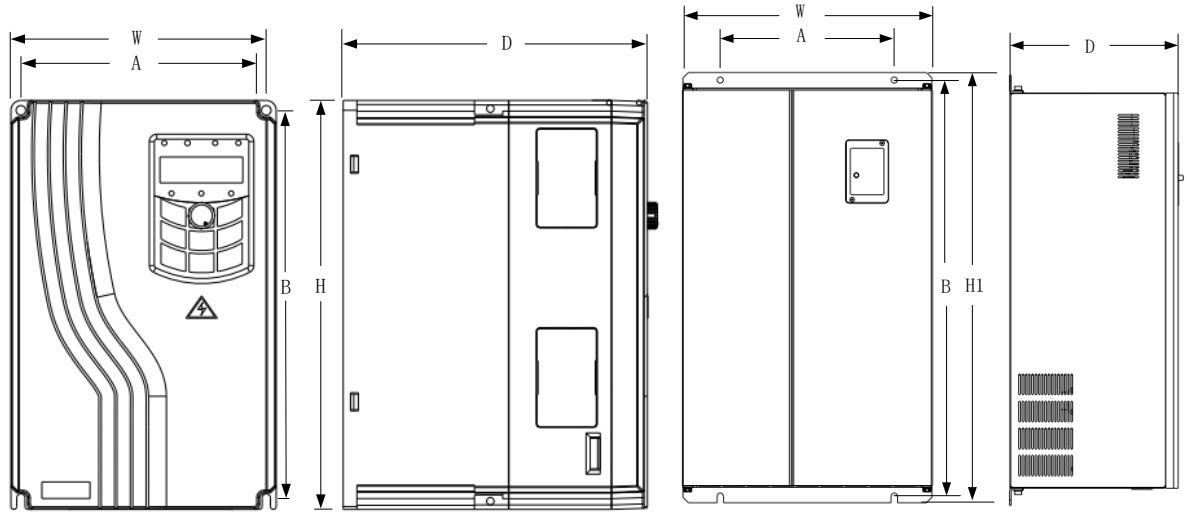
3-1：KDE300A series appearance

3.1.2Appearance and Mounting Hole Dimension



(a) keypad dimension (b) Mounting hole dimension

diagram 3-2：keypad dimension



(a) SIZE A～SIZE C(plastic) appearance dimension (b)SIZE D and above (metal) appearance dimension

Diagram 3-3：KDE300A appearance dimension

Table 3-1KDE300A series appearance and installation dimension

SIZE	Appearance and installation dimension（mm）								WEIGHT (KG)
	A	B	H	H1	W	D	Φd	Mounting screws	
SIZE A	113	172	186	/	125	164	ø5.0	M4×16	2.0
SIZE B	148	236	248	/	160	183	ø5.0	M4×16	3.5
SIZE C	190	305	322	/	208	192	ø6.0	M5×16	6.2
SIZE D	230	440	/	455	290	218	ø7.0	M6×16	16.2
SIZE E	230	540	/	555	320	240	ø10	M8×20	30
SIZE F	320	610	/	635	410	239	ø12	M10×25	45
SIZE G	320	630	/	654	460	340	ø12	M10×25	65
SIZE H	320	770	/	795	460	320	ø13	M12×30	82
SIZE I	320	856	/	886	520	385	ø13	M12×30	105
SIZE J	500	1313	/	1350	750	432	ø13	M12×30	240
SIZE K	500	1410	/	1450	850	432	ø13	M12×30	300
SIZE L	cabinet：1800*1050*460						ø13	M12×30	430

3.2Wiring

3.2.1 Standard wiring diagram

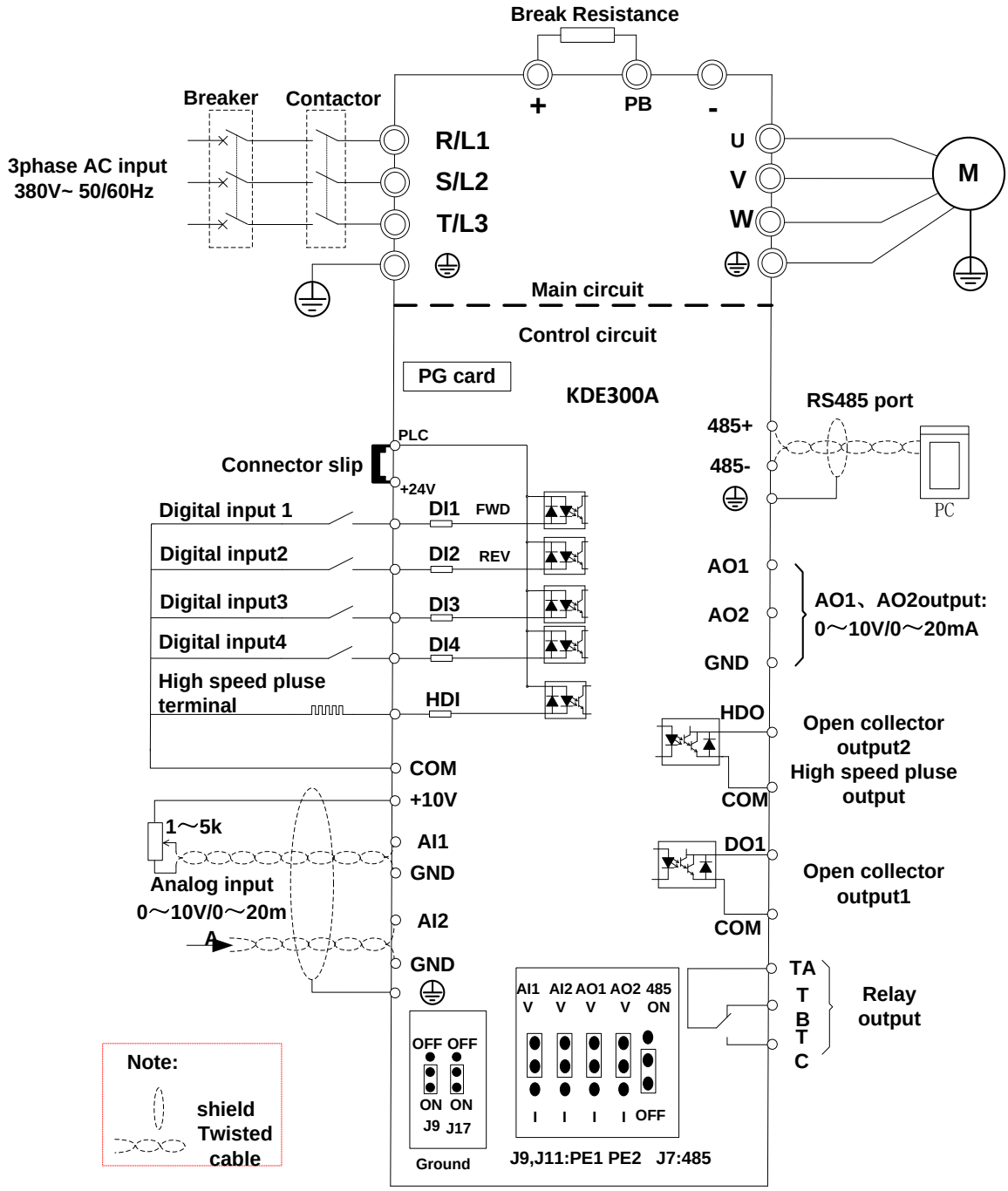
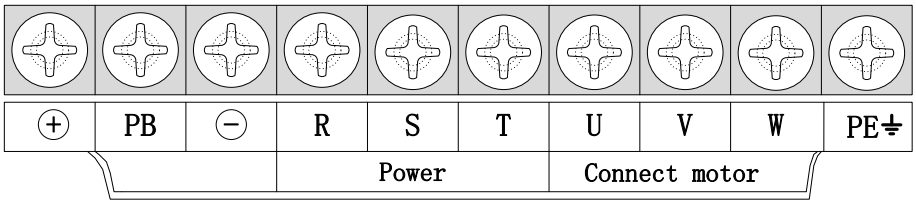


Diagram 3-4 standard wiring

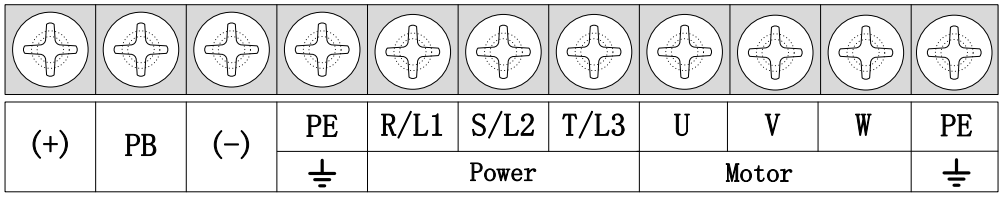
3.2.2Main Circuit Terminals

◆ SIZE A~SIZE B(0.75~7.5kw) Main Circuit Terminals Sketch



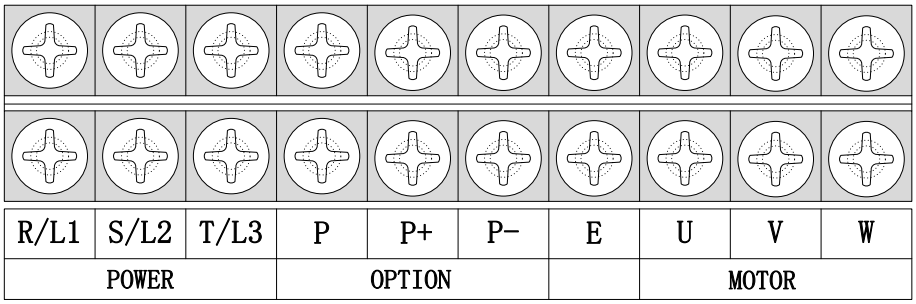
R、S、T	Three-phase AC power input terminals
U、V、W	Three-phase AC power output terminals
⊕、⊖	DC BUS terminals
⊕ 、PB	Connecting terminals of braking resistor
PE⏚	Grounding terminal

◆ SIZE C(11~18.5kw) Main Circuit Terminals Sketch



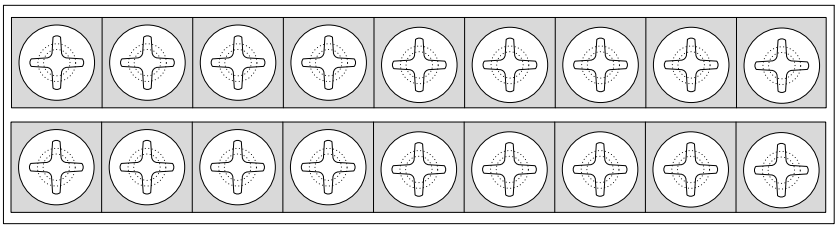
Terminal Symbol	function description
R/L1、S/L2、T/L3	Three-phase AC power input terminals
U、V、W	Three-phase AC power output terminals
(+)、(-)	DC BUS terminals
(+)、PB	Connecting terminals of braking resistor
PE	Grounding terminal

◆ SIZE D~SIZE G(22~110kw) Main Circuit Terminals Sketch



Terminal Symbol	function description
R/L1、S/L2、T/L3	Three-phase AC power input terminals
U、V、W	Three-phase AC power output terminals
P+、P-	DC BUS terminals
P+、P	Connecting terminals of braking resistor
PE	Grounding terminal

◆ SIZE H 及以上(132kw 以上) Main Circuit Terminals Sketch



R/L1	S/L2	T/L3	U/T1	V/T2	W/T3	P+	P-	PE

Terminal Symbol	function description
R/L1、S/L2、T/L3	Three-phase AC power input terminals
U/T1、V/T2、W/T3	Three-phase AC power output terminals
P+、P-	DC BUS terminals
PE	Grounding terminal

3.2.3 Cautions for Main Circuit Wiring

（1）Power Supply Wiring

◆ It is forbidden to connect the power cable to the output terminal of the inverter. Otherwise, the internal components of the inverter will be damaged.

◆ In order to provide input side overcurrent protection and power outage overhaul convenience, the inverter should be connected to the power supply through circuit breakers and contactors.

◆ Please confirm the power phase, the voltage is consistent with the product nameplate, do not match may result in damage to the inverter.

（2）DC wiring

◆ Do not connect the braking resistor directly to +, -, which may cause the inverter to be damaged or even fire.

◆ When using the external brake unit, pay attention to +, - can not be reversed, otherwise it will cause damage to the inverter and brake unit or even cause a fire.

（3）Motor Wiring

◆It is forbidden to short circuit or ground the inverter output terminal, otherwise the internal components of the inverter will be damaged.

◆Avoid short circuit the output cables or with the inverter enclosure, otherwise there exists the danger of electric shock.

◆It is forbidden to connect the output terminal of the inverter to the capacitor or LC/RC noise filter with phase lead, otherwise, the internal components of the inverter may be damaged.

◆When contactor is installed between the inverter and the motor, it is forbidden to switch on/off the contactor during the running of the inverter, otherwise, there will be large current flowing into the inverter, triggering the inverter protection action.

◆Length of cable between the inverter and motor

If the cable between the inverter and the motor is too long, the higher harmonic leakage current of the output end will produce by adverse impact on the inverter and the peripheral devices. It is suggested that when the motor cable is longer than 100m, output AC reactor be installed. Refer to the following table for the carrier frequency setting.

3.2.4Control Circuit Terminal

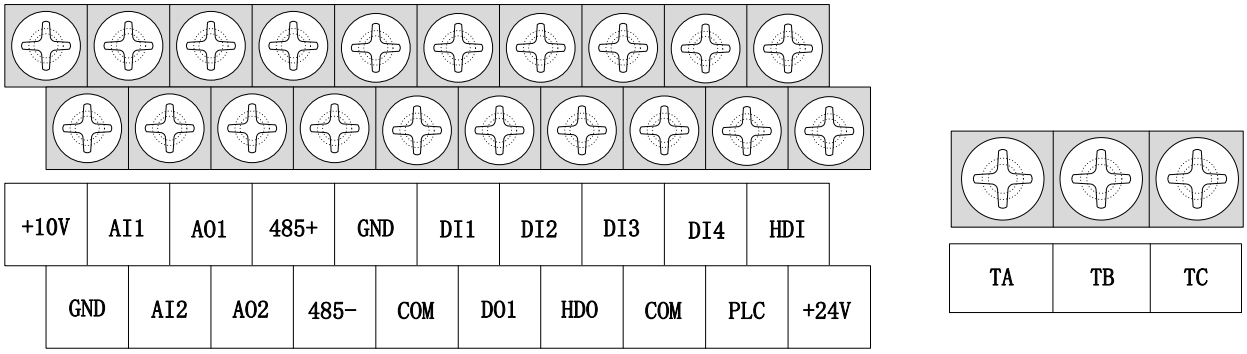


Diagram 3-5KDE300A control circuit terminal

Table 3-2KDE300A control circuit terminal instruction

Type	Terminal Symbol	Terminal Name	Terminal function description
Analog input voltage	+10V	Input voltage	10.10V±1%
			Maximum output current:10mA，it provides power supply to external potentiometer with resistance range of：1KΩ~51KΩ
	GND	Ananog ground	Internal isolation from COM
	AI1	Analog input1	Input voltage:0~10V：Impedance 22KΩ，Maximum input voltage
			Input current:0~20mA：Impedance 500Ω，Maximum input current
			Through the jumper switch AI1 0 ~ 10V and 0 ~ 20mA analog input switch, the factory default voltage input.
	AI2	Analog input 2	Input voltage:0~10V：Impedance 22KΩ，Maximum input voltage
			Input current:0~20mA：Impedance 500Ω，Maximum input current
			Through the jumper switch AI1 0 ~ 10V and 0 ~ 20mA analog input switch, the factory default voltage input.
Analog input	AO1	Analog output 1	Output voltage:0~10V：Impedance ≥10KΩ
			Output current:0~20mA：Impedance 200Ω~500Ω
			Through the jumper switch AO1 0 ~ 10V and 0 ~ 20mA analog output switching, the factory default voltage output.
	AO2	Analog output 2	Output voltage:0~10V：Impedance ≥10KΩ
			Output current:0~20mA：Impedance 200Ω~500Ω
			Through the jumper switch AO1 0 ~ 10V and 0 ~ 20mA analog output switching, the factory default voltage output.
	GND	Ananog ground	Internal isolation from COM
Switch input	+24V	+24V current	24V±10%，Internal isolation from GND
			Maximum output current：200mA
			To provide 24V power supply, generally used as a digital input and output terminal power supply and external sensor power
	PLC	Digital input terminal common	The factory default setting is connected PLC with +24V Terminal for on-off input high and low level switch
			When using the external signal to drive DI1~DI5, it will disconnect the connector slip of PLC with the +24V
	COM	+24V ground	Internal isolation from GND
	DI1~DI4	Digital input terminal 1~4	Optocoupler isolation, compatible with bipolar input
			Frequency range：0~200Hz
			Voltage range：10V~30V
	HDI	Digital input terminal /High-speed pulse input	Digital input terminal：same as DI1~DI4
			Pulse input frequency input：0~50KHz
			Voltage range：10V~30V
Switch output	DO1	Open collector output	Optocoupler isolation
			Voltage range：0V~24V
			Current range：0mA ~50mA
	HDO	Open collector	Open collector output：same as DO1

Type	Terminal Symbol	Terminal Name	Terminal function description
		output /High-speed pulse output	High-speed pulse output：0~50KHz
Relay output	TA/TB/TC	Relay output	TA-TB：nomal open
			TA-TC：nomal close
			Contact rating：AC 250V，3A；DC 30V，1A
485 port	485+	485 Positive differential signal	Baud rate： 1200/2400/4800/9600/19200/38400/57600/115200bps
	485-	485 Negative differential signal	

3.3EMCquestion and solution

The working principle of the inverter determines that it will certainly produce electromagnetic interference, affecting and interfering with other equipment. In the meantime, the frequency converter usually works under the industrial environment with very strong noise, its internal weak signal is also easily disturbed. For safe and trouble-free operation of the frequency converter, as well as the normal and orderly operation of other equipment, install the equipment according to the following rules.。

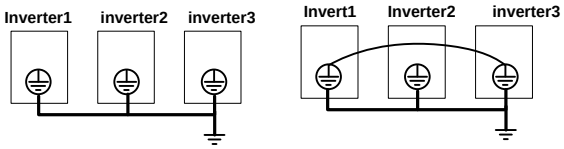
- Install the input noise filter, the filter to the inverter input power supply side of the wiring should be as short as possible.
- Filter shell and the installation of the cabinet should be a large area of reliable connection, in order to reduce the noise current loop impedance.
- The wiring distance between inverter and motor should be as short as possible. The motor cable adopts 4-core cable. One end of the ground wire is grounded at the inverter side and the other end is connected with the motor case. The motor cable is sheathed into the metal pipe.
- Input power line and output motor line should be far away from each other.
- Easily affected equipment and signal lines should be installed away from the inverter.
- The key signal cable should use shielded cable. It is suggested that the shielded cable layer should be grounded by 360 degree grounding method and set in the metal pipe. As far as possible from the inverter input power cable and output motor cable, if the signal cable must cross the input power cable or output motor cable, the two should be orthogonal.
- When using the analog voltage and current signals for remote frequency setting, double-stranded, shielded and shielded cables should be used, and the shield should be connected to the grounding terminal PE of the inverter. The longest signal cable should not exceed 50 meters.
- The control circuit terminals T1A / T1B / T1C, T2A / T2B / T2C and other control circuit terminals should be separated wiring.
- It is forbidden to short-circuit the shield with other signal lines and equipment.
- When connecting the inductive load device (magnetic contactor, relay, solenoid valve, etc.) to the inverter, be sure to use the surge suppressor on the load device coil.
- Correct and reliable grounding is safe and reliable operation of the foundation:

(1) Inverter will generate leakage current, the greater the carrier frequency, the greater the leakage current. Inverter leakage current greater than 3.5mA, the size of the leakage current by the conditions of use, in order to ensure safety, inverter and motor must be grounded;

(2) Grounding resistance should be less than 10 ohms. Grounding cable diameter requirement, refer to the same type of input and output cables half of the cross-sectional area selection;

(3) Do not share the ground wire with welding machines and other power equipment;

(4) When using more than two inverters, do not make the ground wire loop.。



Correctincorrect

3-6Ground wire connection diagram

- Frequency converter to motor cable length and carrier frequency to maintain the appropriate relationship

When the cable between the inverter and the motor is long, due to the influence of distributed capacitance, it is easy to produce electrical resonance, thus generating a large current so that the inverter over-current protection. It is recommended to install the AC output reactor when the motor cable length exceeds 100 meters. Refer to the following table for carrier frequency setting

.3-3 Inverter output cable length and carrier frequency table

Cable length between drive and motor	20m below	50m below	100m below	100m above
Carrier frequency（P22.00）	15kHz below	8kHz below	4kHz below	2kHzbelow

Chapter 4 Operation and display

4.1 LED Instruction of operation and display

LED keyboard consists of 5 digital tubes, 7 lights, 8 keys and a potentiometer; can be used to set the parameters, status monitoring and operation control, LED keyboard shape as shown in Figure 4-1：

Figure 4-1 Operating panel

Description of indicator

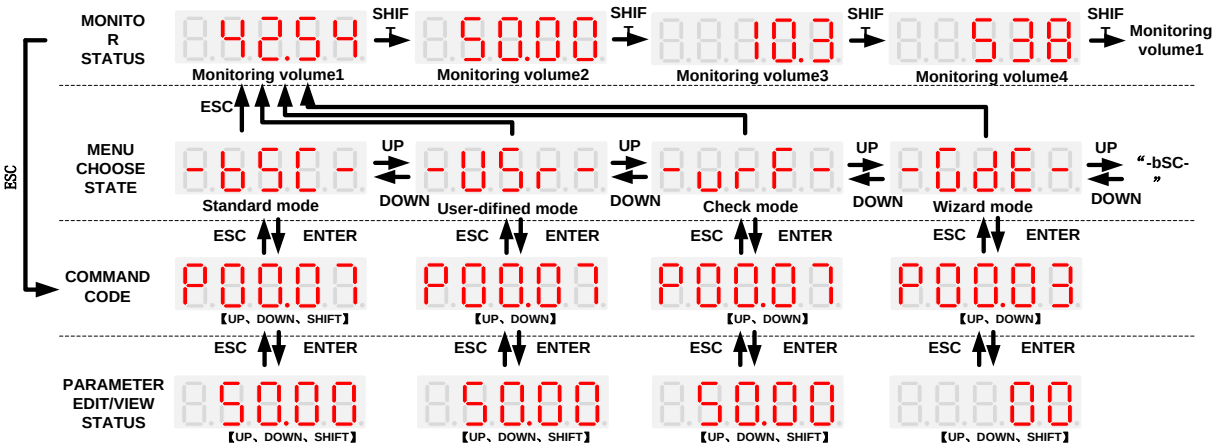
Table 4-1 The name and function of each part of the keyboard

No.	Part	Name	Function
1	PRG	Programming	• Enter or exit menu level
2	ENT	Confirmation	• Enter the menu interfaces level by level, • confirm the parameter setting and save to EEPROM
3	△	Increment	• The number indicated by the cursor increases by one. • Next function code. • Used to switch the left and right screens while in monitor mode
4	▽	Decrement	·The number indicated by the cursor minus one. • The previous function code.
5	MF.K	Multi-function	·Perform function switchover according to the setting of 21.02
6	▷	Shift	• Cursor shift. • Monitor Status Displays the next monitor volume. • Switch left and right screens.
7	RUN	Run	Start the frequency inverter in the operation panel control mode
8	STOP	Stop/Reset	• During operation, press to stop the operation (restricted by parameter 21.03). • In fault status, press this key to reset the fault.
9	Hz	Indicator light:Hz	·Indicate the digital display unit, all three lights off menas other units
10	A	Indicator light:A	
11	V	Indicator light:V	

12	RUN	Running lights	• Off: indicates a stop condition. • On: indicates inverter is running.· Blinking: Deceleration stopped.
13	FWD/REV	Direction indicator	• Used to indicate the sign of the variable when the LED is displaying one of the variables listed in 27.02; • In other cases the sign of the output frequency is indicated.
14	LOCAL/ROMOT	Command source indicator	• Off: The command source is the keyboard. • On: The command source is terminal. • Blinking: The command source is communication.
15	TUNE/TC	Fault indicator	• When it is on, the drive is faulty.

4.2 Display hierarchy and menu mode

KDE300A digital keyboard display is divided into four layers, from top to bottom are: monitoring status, menu mode selection status, function code selection status, parameter editing / viewing status, as shown in Figure 4-2. In the menu mode selection status, press 【UP】 or 【DOWN】 key to select menu mode, press 【ENTER】 to enter the selected menu mode, the following describes several menu modes:



4-2Keyboard operation diagram

◆ Standard mode（-bSC-）

If access (P00.01) is standard, all the function codes mentioned in this manual are accessible.

If access (P00.01) is the end user (in the state of user password lock), then only some function code can be accessed.

◆ User-difined mode（-USr-）

In this menu mode, only 20 user-defined parameters defined are displayed.

◆ Verify mode（-vrF-）

In this menu mode, only parameters that differ from the factory settings are displayed。

◆ Guide mode（-GdE-）

When users first use the inverter, can guide the user to complete a simple trial run。

4.3 Digital tube display

Display of decimal data

16 digits:

The range of unsigned numbers is 0 ~ 65535 (without decimal point). The displayed range of signed numbers is -9999 ~ 32767 (excluding decimal point). The negative numbers less than -9999 will be displayed as -9999.

32 digits:

The left and right screen display, combined with the following figure to illustrate:

Dot1 is used to distinguish between the left and right screens. On indicates the left panel (upper 5 digits) and turns off the right screen (lower 5 digits). When the left screen is displayed, Dot5 is used to indicate the sign digit. On indicates that the value is negative, off indicates the value is Positive.

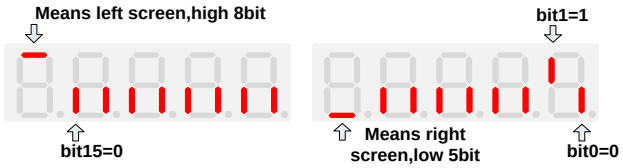
The display range of 32-bit unsigned numbers is 0 to 4294967295 (excluding decimal point), and the displayed range of signed numbers is -2147483648 to 2147483647 (excluding the decimal point).

◆ Binary data display

Binary number currently only supports 16 digits, points left and right screen display.

The leftmost digital tube is used to distinguish the left and right screens: the top digit segment lights up for the left panel and the bottom segment segment lights for the right panel.

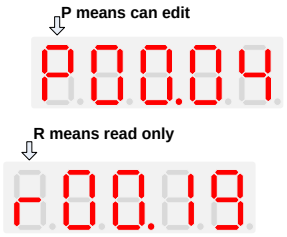
Remove the leftmost digital tube, from right to left, followed by Bit0 ~ Bit15. The upper segment is lit to indicate 1, the lower segment to light to indicate 0.



◆ Parameter attribute identification

Editable parameters The leftmost LED displays "P"; the leftmost LED of the read-only parameter displays "r", as shown below.

◆



◆ Specific symbol

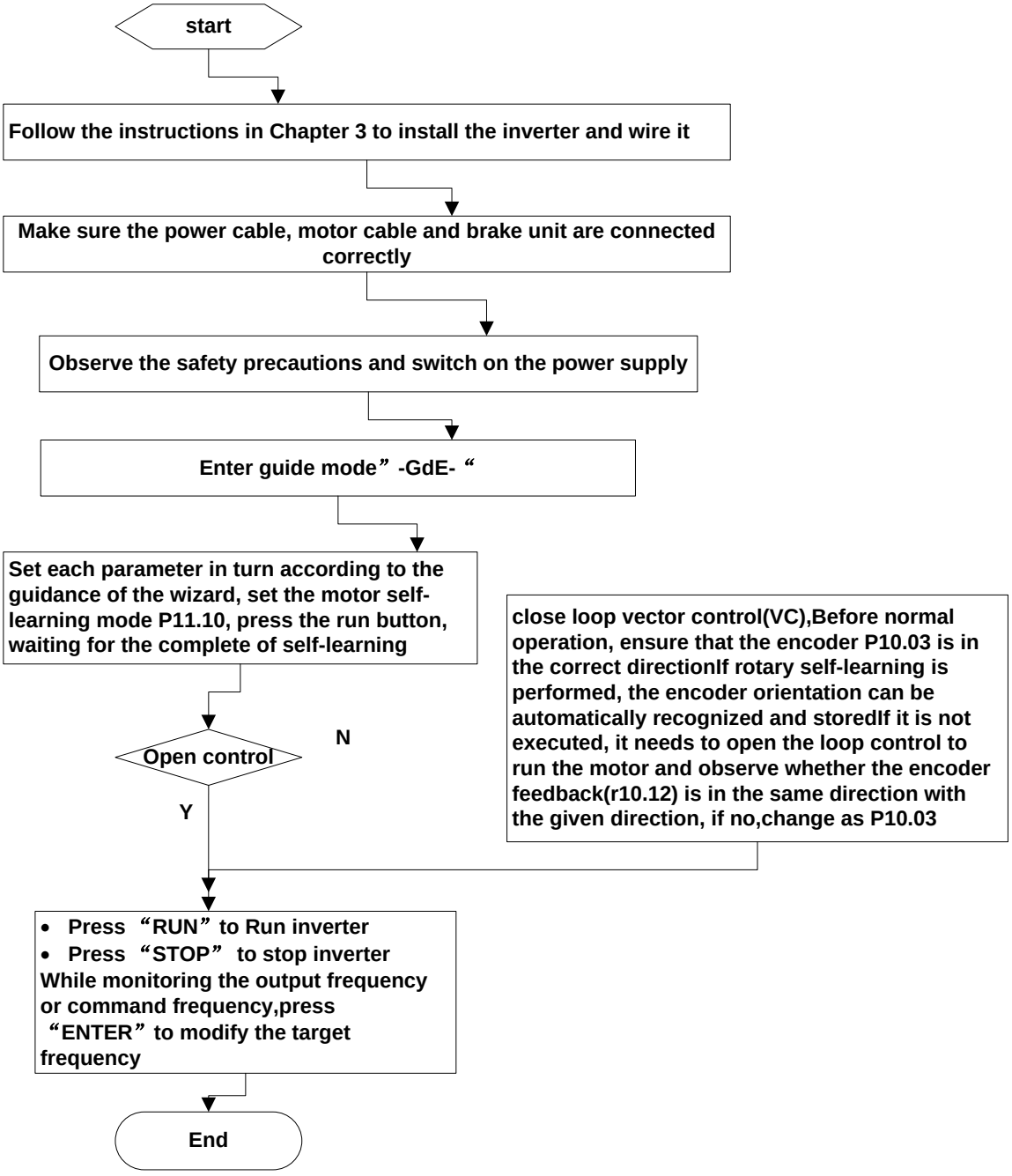
In some cases, the digital tube will display a specific symbol. The meaning of specific symbols is shown in the following table:Table4-2 Digital tube display symbol and meaning

Symbol	Meaning
tUnE	Motor parameter self-learning
bUSY	Processing parameter read and write requests
End	• Indicates that the parameters have been changed and saved to the EEPROM

	• The mission has been completed
Er.xxx	• Fault code, "XXX" is the fault type, see Chapter 6 for details

4.4 Test run

Please follow the procedure below to commission the first power-on。



4-3Trial run flow chart

Chapter 5 Function Code Table

The following is the KDE300A parameter distribution list：

Term Description:

The parameter is also called function code; the operation panel is also called the keyboard.

Due to usage habits, different terms may be used in different places in this manual, but all refer to the same content.

Symbol Description:

"☆" means that the setting value of this parameter can be changed when the inverter is stopped or running.

"★" means that the setting value of this parameter can not be changed when the inverter is running.

"●" indicates that the value of this parameter is the actual test record value, which can not be changed.

Function code	Parameter name	Description	Default	Property
00 Group Basic Function				
P00.00	User password	0 ~ 65535 ➢ No user password status (P00.01 = 1 after power-on): Entering the same non-zero value twice in succession sets a user password and enters lockout. ➢ password lock state: Enter the password to enter the unlock state. ➢ unlocked state: Enter the original password to enter the lock state; enter the same value twice in a row to change the password (clear the password if you enter 0 twice in a row).	0	☆
P00.01	Access authority	0：END USER 1：Standard	1	★
P00.02	Parametercopy andbackup	0：No action 11：save all parameter to EEPROM backup space 12：Restore all parameter from EEPROM backup space 13：Parameter upload to LCD VFD500 (excluded for motor parameter and auto tune related parameter) 14： Parameter upload to LCD VFD500 (All parameter except for factory data)	0	★
P00.03	RESET	0：NO ACTION 11：Restore default parameter except for motor parameter and auto-tune related parameter and factory parameter 12:Restore default to factory parameter 13：Clear tripping record	0	★
P00.04	Motor Control mode	0：VF 1：SVC(sensorless vector control) ➢ Open loop vector and torque control without encoder feedback 2：VC Vector control with sensor ➢ Close loop vec tor and torque control supporting encoder feedback in high precision or torque control application	0	★
P00.05	Running mode	0：Speed mode 1：Torque mode ➢ If use with DI function,19:Switch between torque and speed Control and 20: torque control diabled. Actuall effective running	0	★

Function code	Parameter name	Description	Default	Property
		mode is related with DI status		
P00.06	Source of the Operation Command	0：keypad 1：terminal 2：communication ➢ Command source: run、stop、forward、reverse、jog、fast brake stop.etc ➢ If use with DI function, 12：Switching run command to Keypad and 13：Switching run command to Communication,Actuall effective command source is related with DI status	0	★
P00.07	Numeric frequency setting	00.00Hz～maximum frequency	50.00Hz	☆
P00.08	Rotation direction	0：Forward 1：Reverse ➢ It is only for keypad control to change running direction by giving frequency symbol to be reverse)If command by keypad/terminal /communication,and not want to achieve reverse running by giving frequency symbol to be reverse,need to change P22.13 in stop mode(see parameter P22.13)	0	☆
P00.09	Reverse control	0：enable 1：disbale	0	★
P00.10	Motor option	0：motor 1 1：motor 2 If use with DI function,16:Switch between motor 1 and motor 2,Actuall effective command source is related with DI status	0	★
P00.11	Special industry	0：standard drive 1：Reserved	0	★
r00.18	Power board software version	-	-	●
r00.19	Control board software version	-	-	●
r00.20	LCD SOFTWARE VERSION	-	-	●
r00.21	SN 1	-	-	●
r00.22	SN 2	-	-	●

Function code	Parameter name	Description	Default	Property
01 Group frequency source selction				
P01.00	Main frequency source selction (A)	0：Digital setting 1：AI1 2：AI2 3：AI3(reserved) 4：AI4（reserved） 5：HDI 6：multiple speed 7：communication 8：PID 9：Internal PLC 10:Potentiometer Notice:DI terminal function code 26-32 superior than this function code	10	★
P01.01	Auxiliary frequency source selction (B)	Same as P01.00 Notice:DI terminal function code 33 superior than this function code	0	★
P01.02	Reference option for auxiliary frequency source	0：Relative to Maximum frequency 1：Relative to main frequency	0	★
P01.03	Auxiliary frequency gains	0.0～300.0	100.0%	☆
P01.04	Frequency source selection	0：main frequency sourceA 1：auxiliary frequency sourceB 2：Main and auxiliary arithmetic results 3：Switchover between main and auxiliary frequency 4：switchover between main frequency source A and A+B Arithmetic results 5：Switchover between B and (A+B) （*）DI function code 25 effective to corresponding terminal ,frequency will adopt the latter	0	★
P01.05	Main and Auxiliary arithmetic	0：A+B 1：A-B 2：The bigger of main A and Auxliary B 3：The smaller of Main A and Auxiliary B	0	★
P01.06	Maximum frequency	10.00～600.00Hz	50.00Hz	★
P01.07	Upper limit frequency control	0：digital setting (set through P01.08) 1：AI1 2：AI2 3：Reserved 4：Reserved 5：Pulse setting HDI 6：Reserved	0	★

Function code	Parameter name	Description	Default	Property
		7：Communication setting		
P01.08	Upper limit frequency	Lower limit frequency(P01.09)～maximum frequency (P01.06)	50.00Hz	☆
P01.09	Lower limit frequency	0.00Hz～upper limit frequency	0.00Hz	☆
P01.10	Action when set frequency lower than lower limit frequency	0：Run at low limit frequency 1：Stop after delaying P01.11 2：Run at zero speed	0	★
P01.11	Delay time when set frequency lower than lower limit frequency	0.000s～30.000s	0.000s	★
P01.12	Jump frequency start up protection	Unit/ten/hundred'digit：three jump frequency 1/2/3 0：Disable 1：Enable (avoid risk speed)	000	☆
P01.13	Jump frequency 1 lower limit	0.00Hz～(P01.14)	0.00Hz	☆
P01.14	Jump frequency upper limit	P01.13- (P01.06)Maximum frequency	0.00Hz	☆
P01.15	Jump frequency 2 lower limit	0.00Hz～(P01.16)	0.00Hz	☆
P01.16	Jump frequency 2 upper limit	P01.15～maximum frequency(P01.06)	0.00Hz	☆
P01.17	Jump frequency 3 lower limit	0.00Hz～(P01.18)	0.00Hz	☆
P01.18	Jump frequency 3 upper limit	P01.17～maximum frequency(P01.06)	0.00Hz	☆

Risk speed or Jump frequency start up protection is used to some situation which need avoid motor speed and speed range,for example,due to mechanical resonance ,P01.12 will be enabled to avoide risk speed in forward or reverse mode

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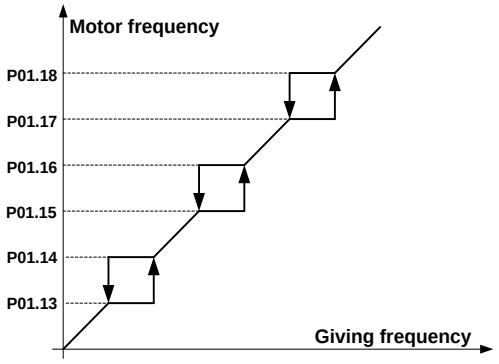


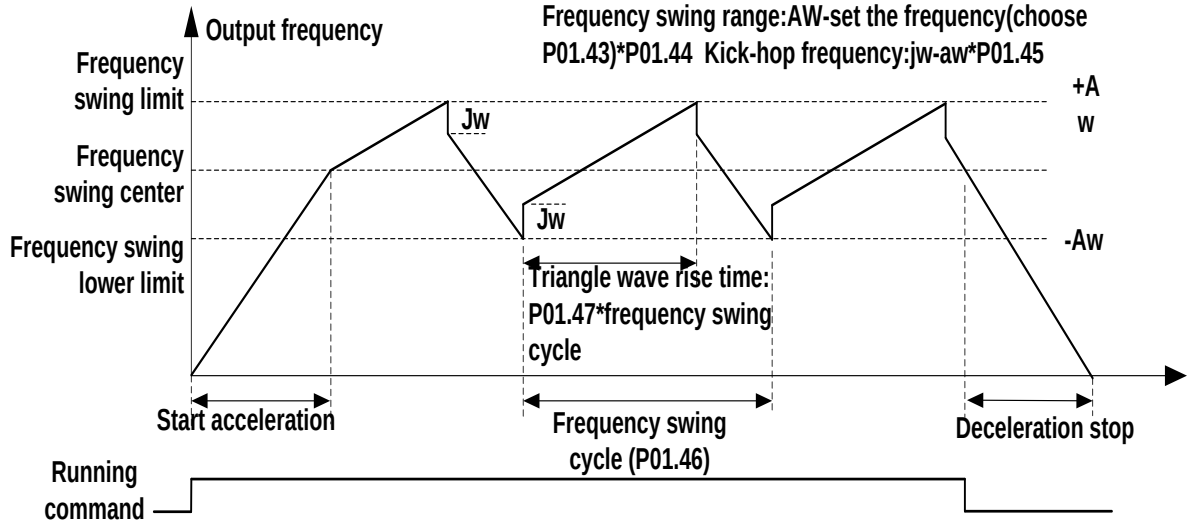
P01.19	Multiple speed reference source	Unit'digit：0 phase reference source set by 0-multiple speed(P01.21) 1-preset frequency (P00.07)	00	★

Function code	Parameter name	Description	Default	Property
		2:AI1 3:AI2 4:Reserved 5:Reserved 6:HDI pulse 7:Communication 8:PID Ten's digit：Combination of multiple speed 0：Combination methord 1：Priority method		
K1-K4 Each represent DI multiple terminal 1-4 status ,O represent ineffective ,1 represent effective,M indicates current output number of speed.Instructions of multiple speed combination 0: Combination method M = K1 + (K2*2) + (K3*4) + (K4*8) For example: K0=1,K1=0,K2=1,K3=0,Then M=5，current output fifth phase speed 1: Priority method Multiple speed output 0～4 phase speed，Priority K4＞K3＞K2＞K1。 For example: K4=1, then M=4; K4=0,K3=1,then M=3; K4=0,K3=0,K2=1,then M=2; K4=0,K3=0,K2=0,K1=1, then M=1; K1～K4 all to be 0, then M=0				
P01.20	Multiple speed Rotation direction	Bit0 ～ 15 corresponding to 0 ～ 15 phase direction 0:forward direction 1:reverse direction	0	☆
P01.21	Multiple speed 0	Lower limit frequency (P01.09) ～ maximum frequency (P01.06)	0.00Hz	☆
P01.22	Multiple speed 1	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.23	Multiple speed 2	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.24	Multiple speed 3	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.25	Multiple speed 4	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.26	Multiple speed 5	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.27	Multiple speed 6	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.28	Multiple speed 7	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.29	Multiple speed 8	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.30	Multiple speed 9	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆

Function code	Parameter name	Description	Default	Property
P01.31	Multiple speed 10	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.32	Multiple speed 11	Lower limit frequency(P01.09) ～ maximum frequency(P01.06)	0.00Hz	☆
P01.33	Multiple speed 12	Lower limit frequency(P01.09)～maximum frequency(P01.06)	0.00Hz	☆
P01.34	Multiple speed 13	Lower limit frequency(P01.09)～maximum frequency(P01.06)	0.00Hz	☆
P01.35	Multiple speed 14	Lower limit frequency(P01.09)～maximum frequency(P01.06)	0.00Hz	☆
P01.36	Multiple speed 15	Lower limit frequency(P01.09)～maximum frequency(P01.06)	0.00Hz	☆
P01.37	Jog frequency	0.00Hz～maximum frequency(P01.06)	5.00Hz	☆
P01.38	Jog command when running	0：not responsive 1：responsive	0	★
P01.39	UP/DOWN rates	0.00(auto rates)～600.00Hz/s	1.00Hz/s	☆
P01.40	UP/DOWN Control	Unit'digit： 0：zero clearing in non-running 1：zero clearning when UP/DOWN command not effective 2：not zero cleaning (decide by remembering digit when power failure Ten's digit： 0：non-zero cleaning at power failure 1:save at power failure UP/DOWN offset Hundred's digit: UP/DOWN near to zero 0: forbidden 1:enable	000	★
P01.41	Droop control gains	0.00～1.00 Rotation speed drop value based on Rated load（relative to maximum frequency） Frequency drop volume:Max frequency*P01.41*Current load/rated load	0.00	☆
P01.42	Droop control filtering time	0.000s～10.000s	0.050s	☆
P01.43	Textile frequency setting	0: relative to center of textile frequency 1: relative to maximum frequency	0	☆
P01.44	Textile frequency	0.0%～100% relative to center of textile frequency P01.43 = 0Textile frequency Aw = P01.44 * center frequency P01.43 = 1: Textile frequency Aw = P01.44 * max frequency	0.0%	☆
P01.45	Jump frequency	0.0%～50.0% relative to textile frequency	0.0%	☆
P01.46	Textile period	0.1s～3000.0s	10.0s	☆

Function code	Parameter name	Description	Default	Property
P01.47	Triangle wave rising time coeffcient	0.1%～100.0% relative to textile period	50.0%	☆

This function is mostly used in textile and chemical industry and some application such as traversing and winding so it is used for balancing the workload allocation when multiple motors are used to drive the same load. The output frequency of the frequency inverters decreases as the load increases. You can reduce the workload of the motor under load by decreasing the output frequency for this motor, implementing workload balancing among multiple motors.**P01.44 or P01.46=0,This function disable**



Function code	Parameter name	Description	Default	Property
02 Group Start and stop parameter				
P02.00	Starting mode	0：direct start Inverter will start from P02.01,After P02.02,It will go to setting frequency as per S curve 1：speed tracking/Searching Inverter will do search for motor speed and recognize and accelerate and decelerate to setting frequency.See Parameter P02.16-02.19	0	★
P02.01	Startup frequency	0.00Hz～10.00Hz	0.00Hz	★
P02.02	Startup frequency holding time	0.000s～10.000s	0.000s	★
P02.03	Quick-response excitation	0：disable 1：enable Set 1= enable it will automatically calculate pre-exciation current P02.04 and pre-excitaton time ,after finishing calculation,this parameter will reset to 0	0	★
P02.04	Pre-excitation current	0%～200% motor rated current	Depend	★
P02.05	Pre-excitation time	0.00s～10.00s Pre-excitation enable Asynchronous motor for magnetic field for higher starting torque	Depend	★
P02.06	DC brake current at start-up	0～100% motor rated current	100%	☆
P02.07	DC brake time at start-up	0.000s～30.000s	0.000s	★
P02.08	Stop method	0：ramp to stop 1：free coast to stop	0	☆
P02.09	Startup frequency of DC brake at stop	0.00Hz～50.00Hz	1.00Hz	★
P02.10	DC braking current at stop	0～100% motor rated current(Maximum value not higher than drive rated current)	100%	☆
P02.11	DC brake time at stop	0.000s～30.000s	0.000s	★
P02.12	Magnetic flux brake gain	1.00～1.50 Over excitation braking convert some kinetic energy to motor heating by increasing motor excitation.value 1 means ineffective: value higher,better performance but output current bigger	1.00	★
P02.13	Delaying frequency at stop	0.00Hz～20.00Hz	0.50Hz	★
P02.14	Delaying time at stop	0.000s～60.000s 0.000s:no function for delaying time at stop >0.000s:it is effective,when output frequency	0.000s	★

Function code	Parameter name	Description	Default	Property
		decrease lower than delaying frequency at stop (P02.13),inverter will block pulse output after delaying time at stop (P02.14).if run command comes during delaying time,inverter will restart.it is useful to some application with jog function		
P02.15	The minimum blocking time after free stop	0.010s～30.000s	Depend	★
P02.16	Speed search mode	Unit's digit：tracking mode 0 ： speed search for maximum output frequency 1：speed search for frequency at stop 2：speed search for grid frequency Ten's digit：direction choosing 0：only search at given frequency direction 1：search on the other direction when failed for given frequency tracking	10	★
P02.17	Deceleration time for speed search	0.1s～20.0s	2.0s	★
P02.18	Current for speed search	10%～150% motor rated current	40%	★
P02.19	Speed search compensation factor	0.00～10.00	1.00	★

Function code	Parameter name	Description	Default	Property
03 Group Ramp and S curve				
P03.00	Acceleration and deceleration curve selection	0：linear 1：S curve A 2：S curve B	0	★

Acceleration and deceleration curve, also known as "Ramp Frequency Generator (RFG)", is used to smooth the frequency command. KDE300A/500 supports the following acceleration and deceleration curve:

0: linear acceleration / deceleration

The output changes at a constant acceleration or deceleration. Acceleration time refers to the time from when the inverter accelerates from zero to the reference frequency (selected by P03.15); deceleration time refers to the time required to decelerate from the reference frequency to zero.

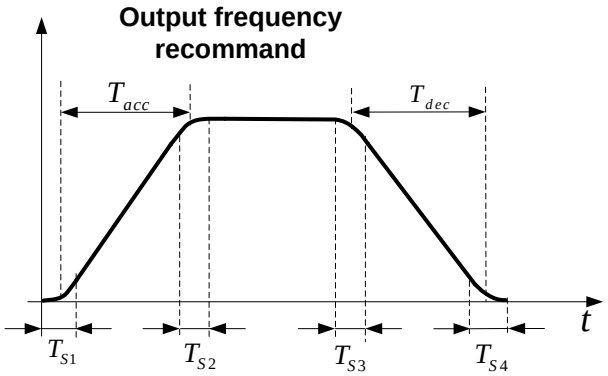
1: S curve method

This acceleration and deceleration curve acceleration "a" changes in a ramp, start and stop relatively flat. Acceleration and deceleration process as shown below, Tacc and Tdec for the set acceleration and deceleration time.

The acceleration and deceleration curve of the equivalent acceleration and deceleration time:

Acceleration time = Tacc + (Ts1 + Ts2) / 2

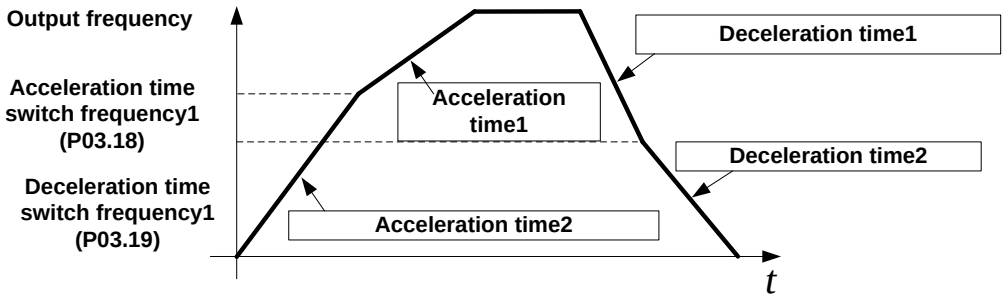
Deceleration time = Tdec + (Ts3 + Ts4) / 2



2: S curve method B

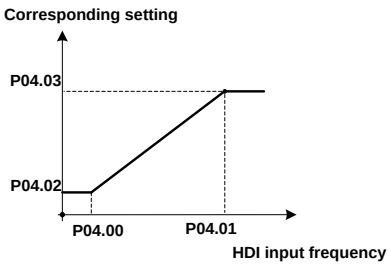
The time of this S-curve is defined as in the method A except that in the acceleration / deceleration process, if the target frequency suddenly approaches or the acceleration / deceleration time changes, the S-curve is re-planned. In addition, when the target frequency changes, the S Curves avoid "overshoot" as much as possible.

P03.01	Acceleration time 1	Setting value depend on P03.16 P03.16 = 2, 0.00～600.00s; P03.16 = 1, 0.0s～6000.0s; P03.16 = 0, 0s～60000s	10.00s	☆
P03.02	Deceleration time 1	Setting value depend on P03.16 P03.16 = 2, 0.00～600.00s; P03.16 = 1, 0.0s～6000.0s; P03.16 = 0, 0s～60000s	20.00s	☆
P03.03	Acceleration time2	0.01～60000s same as P03.01	10.00s	☆
P03.04	Deceleration time2	0.01～60000s same as P03.02	20.00s	☆
P03.05	Acceleration time3	0.01～60000s same as P03.01	10.00s	☆
P03.06	Deceleration time3	0.01～60000s same as P03.02	20.00s	☆
P03.07	Acceleration time4	0.01～60000s same as P03.01	10.00s	☆
P03.08	Deceleration time4	0.01～60000s same as P03.02	20.00s	☆

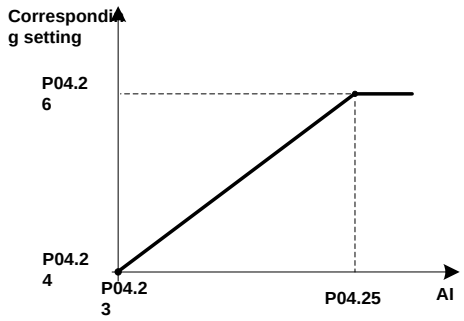
<table>
<tr><th>Function code</th><th>Parameter name</th><th>Description</th><th>Default</th><th>Property</th></tr>
<tr><td colspan="5">The KDE300A provides four groups of acceleration and deceleration time. The actual acceleration / deceleration time can be selected by different methods such as DI terminal, output frequency and PLC running segments. Several methods can not be used at the same time. Factory default is to use acceleration / deceleration time
1.DI terminal select acceleration and deceleration time of the mapping table is as follows:：
<table>
<tr><th>Acceleration and deceleration time terminal 2</th><th>Acceleration and deceleration time terminal 1</th><th>Acceleration and deceleration time terminal</th></tr>
<tr><td>OFF</td><td>OFF</td><td>Acceleration and deceleration time terminal 1（P03.01,P03.02）</td></tr>
<tr><td>OFF</td><td>ON</td><td>Acceleration and deceleration time terminal 2（P03.03,P03.04）</td></tr>
<tr><td>ON</td><td>OFF</td><td>Acceleration and deceleration time terminal 3（P03.05,P03.06）</td></tr>
<tr><td>ON</td><td>ON</td><td>Acceleration and deceleration time terminal 4（P03.07,P03.08）</td></tr>
</table>
The schematic diagram of selecting acceleration / deceleration time according to the output frequency is as follows：


Other ways to select acceleration / deceleration time can be found in the description of relevant parameters。</td></tr>
<tr><td>P03.09</td><td>Jog Acceleration time</td><td>Time Setting same as P03.01</td><td>6.00s</td><td>☆</td></tr>
<tr><td>P03.10</td><td>Jog Deceleration time</td><td>Time Setting same as P03.02</td><td>10.00s</td><td>☆</td></tr>
<tr><td>P03.11</td><td>S-curve Acceleration begin time</td><td>Setting value depend on P03.16
P03.16 = 2, 0.01～30.00s;
P03.16 = 1, 0.1s～300.0s;
P03.16 = 0, 1s～3000s</td><td>0.50s</td><td>☆</td></tr>
<tr><td>P03.12</td><td>S-curve Acceleration arrival time</td><td>SAME AS P03.11</td><td>0.50s</td><td>☆</td></tr>
<tr><td>P03.13</td><td>S-curve Deceleration begin time</td><td>SAME AS P03.11</td><td>0.50s</td><td>☆</td></tr>
<tr><td>P03.14</td><td>S-curve Deceleration Arrival time</td><td>SAME AS P03.11</td><td>0.50s</td><td>☆</td></tr>
<tr><td>P03.15</td><td>Accel and Deceltime</td><td>0：maximum frequency
1：Motor rated frequency</td><td>0</td><td>★</td></tr>
</table>

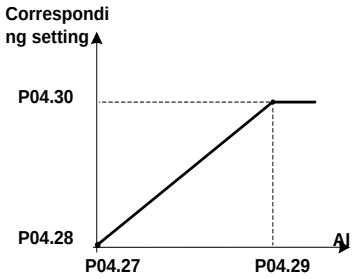
Function code	Parameter name	Description	Default	Property
	frequency benchmark			
P03.16	Accel and Decel time unit selection	0：1s 1：0.1s 2：0.01s	2	★
P03.17	Quickstop deceleration time	0.01～65000s	5.00s	☆
P03.18	Switchingfrequency 1 in acceleration time	0.00Hz～maximum frequency(P01.06)	0.00Hz	☆
P03.19	Switchingfrequency 1 in deceleration time	0.00Hz～maximum frequency(P01.06)	0.00Hz	☆
P03.20	Forward/reverse Ddeadband time	0.00s～30.00s Waiting time for zero speed during forward and reverse switchover	0.00s	★
04 Group Pulse and Analog input				
P04.00	Minimum input pulse frequency	0.00kHz～50.00kHz	1.00kHz	☆
P04.01	Maximum input pulse frequency	0.00kHz～50.00kHz	30.00kHz	☆
P04.02	Setting Corresponding to Minimum input	-100.0%～100.0%	0.0%	☆
P04.03	Setting Corresponding to maximum input	-100.0%～100.0%	100.0%	☆
P04.04	Pulse input filter time	0.000s～10.000s	0.050s	☆
r04.05	Pluse input frequency	0.00kHz～50.00kHz	-	●
r04.06	HDI equivalent value	-100.0%～100.0%	-	●
P04.07	AI 1 Curve setting	Unit's：AI curve selection 0：curve A 1：curve B 2：Curve C 3：Curve D Ten'unit：when input signal lower than minimum input 0：equal to minimum input 1：equal to 0.0%	00	★
P04.08	AI1 filter time	0.000s～10.000s	0.100s	☆
r04.09	AI curve 1 minimum input	0.00V～10.00V	-	●



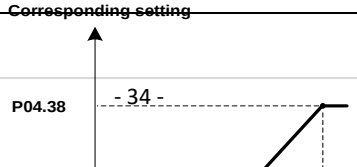
Function code	Parameter name	Description	Default	Property
r04.10	Setting corresponding to Minimum/maximum input of curve 1	-100.0%～100.0%	-	●
P04.11	AI 2 Curve setting	Value setting Same as P04.07	01	★
P04.12	AI 2 filter time	0.000s～10.000s	0.100s	☆
r04.13	AI curve 2 minimum input	0.00V～10.00V	-	●
r04.14	Setting corresponding to Minimum/maximum input of curve 2	-100.0%～100.0%	-	●
P04.23	Curve A horizontal axis 1	0.00V～P04.25	0.00V	☆
P04.24	Curve Avertical axis 1	-100.0%～100.0%	0.0%	☆
P04.25	Curve A horizontal axis 2	P04.23～10.00V	10.00V	☆
P04.26	Curve A vertical axis 2	-100.0%～100.0%	100.0%	☆
P04.27	Curve B horizontal axis 1	0.00V～P04.29	0.00V	☆
P04.28	Curve B vertical axis 1	-100.0%～100.0%	0.0%	☆
P04.29	Curve B horizontal axis 2	P04.27～10.00V	10.00V	☆
P04.30	Curve B vertical axis 2	-100.0%～100.0%	100.0%	☆
P04.31	Curve C horizontal axis 1	0.00V～P04.33	0.00V	☆

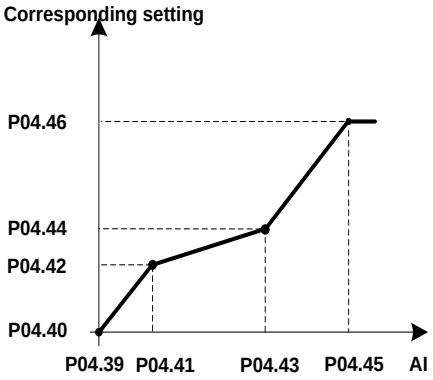


Note:input less than P04.23，output decide by curve ten's digit。



Note:input less than P04.27，output decide by curve ten's digit



Function code	Parameter name	Description		Default	Property
P04.32	Curve C vertical axis 1	-100.0%～100.0%	Note:input less than P04.31，output decide by curve ten's digit	0.0%	☆
P04.33	Curve C horizontal axis 2	P04.31～P04.35		3.00V	☆
P04.34	Curve C vertical axis 2	-100.0%～100.0%		30.0%	☆
P04.35	Curve C horizontal axis 3	P04.33～P04.37		6.00V	☆
P04.36	Curve C vertical axis 3	-100.0%～100.0%		60.0%	☆
P04.37	Curve C horizontal axis 4	P04.35～10.00V		10.00V	☆
P04.38	Curve C vertical axis 4	-100.0%～100.0%		100.0%	☆
P04.39	Curve D horizontal axis 1	0.00V～P04.41	 Note:input less than P04.39,output decide by curve ten's digit	0.00V	☆
P04.40	Curve D vertical axis 1	-100.0%～100.0%		0.0%	☆
P04.41	Curve D horizontal axis 2	P04.39～P04.43		3.00V	☆
P04.42	Curve D vertical axis 2	-100.0%～100.0%		30.0%	☆
P04.43	Curve D horizontal axis 3	P04.41～P04.45		6.00V	☆
P04.44	Curve D vertical axis 3	-100.0%～100.0%		60.0%	☆
P04.45	Curve D horizontal axis 4	P04.43～10.00V		10.00V	☆
P04.46	Curve D vertical axis 4	-100.0%～100.0%		100.0%	☆

05 Group Pulse and Analog output				
r05.00	Actual output Pulse frequency	0.00kHz～50.00kHz	-	●
P05.01	HDO Pulse Output type	0：Common numeric output (DO2 P07.02) 1：high frequency pulse output (Hdo)	0	☆
P05.02	High frequency pulse output function(Hdo)	0：Running frequency（0～max frequency） 1：set frequency（0～max frequency） 2：output current（0～2times motor rated current） 3：output torque(0～3times motor rated torque) 4：set torque(0～3times motor rated torque) 5：output voltage（0～2times motor rated voltage） 6: DC bus voltage（0～2times drives standard DC bus voltage） 7: output power（0～2times motor rated power） 9: AI1（0.00～10.00V） 10: AI2（0.00～10.00V）	0	☆
P05.03	HDO Minimum output pulse frequency	0.00kHz～50.00kHz HDO terminal output pulse frequencywhen Output signal source=0	1.00kHz	☆
P05.04	HDO Max output pulse frequency	0.00kHz～50.00kHz HDO terminal output pulse frequencywhen Output signal source=maximum value	30.00kHz	☆
r05.05	AO1 actual value	0.0%～100.0%	-	●
P05.06	AO1 output function signal selection	Same as P05.02	0	☆
P05.07	AO1 output offset	-100.0%～100.0%	0.0%	☆
P05.08	AO1 output gain	-10.00～10.00	1.00	☆
The output error of AO1 can be corrected by P05.07 and P05.08, or the mapping relationship between signal source and actual output can be changed. The formula is: AO.c = P05.07 + P05.08 × AO.p AO.c: the actual output of AO1; AO.p: AO1 before correction value; AO.c, AO.p, 100.0% of P05.07 corresponds to 10V or 20mA.				
r05.09	AO2 actual value	0.0%～100.0%	-	●
P05.10	AO2 output function signal selection	Same as P05.02	0	☆
P05.11	AO2 output offset	-100.0%～100.0%	0.0%	☆
P05.12	AO2 gain	-10.00～10.00	1.00	☆
The output error of AO2 can be corrected by P05.11 and P05.12, or the mapping relationship between signal source and actual output can be changed. The formula is: AO.c = P05.11 + P05.12 × AO.p AO.c: the actual output of AO2; AO.p: AO2 before correction; AO.c, AO.p, 100.0% of P05.11 corresponds to 10V or 20mA.				

06 Group Digital input				
r06.00	DI port status	Bit0～Bit6 Correspond to DO1～DO7 Bit12～Bit15 Correspond to VDI1～VDI4	-	●
P06.01	DI1 Numeric input function	0：no function 1：run terminal 2：reverse/Forward and reverse switchover 3：three wire control 4：forward jog command 5：reverse jog command 6：Terminal UP 7：Terminal DOWN 8：Clear up UP/DOWN offset 9：coast to stop 10：fault reset 11：Reverse forbidden 12：Switching run command to Keypad 13：Switching run command to Communication 14：fast stop 15：external stop 16：Switch between motor 1 and motor 2 17：Pause operatoin 18：DC brake 19：Switch between torque and speed Control 20：torque control diabled 21：Multi-step speed terminal 1 22：Multi-step speed terminal2 23：Multi-step speedterminal3 24：Multi-step speed terminal4 25：frequency source switchover 26：Switch main frequency source to Numeric frequency setting 27：Switch main frequency source to AI1 28：Switch main frequency source to AI2 29：Switch main frequency source to AI3 30：Switch main frequency source to AI4 31：Switch main frequency source to high-frequency pulse input 32：Switch main frequency source to communication setting 33：Switch auxiliary frequency source to numeric frequency setting 34：Accel and Decel time terminal 1 35：Accel and Decel time termina2	1	★
P06.02	DI2 Numeric input function		2	★
P06.03	DI3 Numeric input function		0	★
P06.04	DI4 Numeric input function		0	★
P06.05	DI5 Numeric input function		0	★
P06.06	DI6 Numeric input function（option card）		0	★
P06.07	DI7 Numeric input function（option card）		0	★
P06.13	VDI1 Numeric input function（option card）		0	★

P06.14	VDI2 Numeric input function（option card）	36：Accel and Decel Stop 37：User-defined fault 1 38：User-defined fault 2 39：PID pause 40：PID integral pause 41：PID parameter Switchover 42：PID Positive/negative reaction switch 43：Preset PID terminal 1 44：Preset PID terminal 2 45：PID Main and Auxaliary command switch 46：PID Main and Auxaliary feedback switch 47：Simple PLC status reset 48：Simple PLC time stop 49：swing frequency stop 50：Counter 1 input 51：Counter 1 reset/clear 52：Counter 2 input 53：Counter 1 reset/clear 54：clear/reset timed running time 55：motor 2 Accel and Decel time selection	0	★
P06.15	VDI3 Numeric input function（option card）		0	★
P06.16	VDI4 Numeric input function（option card）		0	★
P06.17	Virtual input source	Unit's digit：VDI1 input signal source 0：from forcing data (P06.18,P06.19) 1～4：variable selector 1-4 Output 5～8 logic block 1-4 output see P44 9～Eprogrammable relay 1～4 see P43 Ten's digit：VDI2 input signal source Same as Unit'digit Hundred's digit：VDI3 input signal source Same as unit's digit Thousand's digit：VDI4 input signal source Same as Unit'digit	0000	★
P06.18	DI Forcing function	Define as per bit :disable;1:enable Bit0-bit11:DI1-DI12 Bit12-bit15:VDI1-VDI4	H11110000 L00000000	★
P06.19	DI Forcing data	Define as per bit 0:effective;1:ineffective Bit0-bit11:DI1-DI12 Bit12-bit15:VDI1-VDI4	0	☆
P06.20	Effective logic of Numericinput terminal	Define as per bit 0:positive logic;1:negative logic Bit0-bit11:DI1-DI12 Bit12-bit15:VDI1-VDI4	0	★
P06.21	DI1 Effective delay time	0.000s～30.000s	0.000s	☆
P06.22	DI1 ineffective delay time	0.000s～30.000s	0.000s	☆
P06.23	DI2 Effective delay time	0.000s～30.000s	0.000s	☆
P06.24	DI2 ineffective delay time	0.000s～30.000s	0.000s	☆
P06.25	DI3 Effective delay time	0.000s～30.000s	0.000s	☆
P06.26	DI3 ineffective delay time	0.000s～30.000s	0.000s	☆
P06.27	DI4 Effective delay time	0.000s～30.000s	0.000s	☆

P06.28	DI4 ineffective delay time	0.000s～30.000s	0.000s	☆
P06.29	Two wire/3wire operation control	0：2-wire mode (FWD+REV)1 1：2-wire mode RUN+DIRECTION)2 2：3-wire 1(FWD+REV+ENABLE) 3：3-wire 2 RUN +FWD/REV+ENABLE	0	★

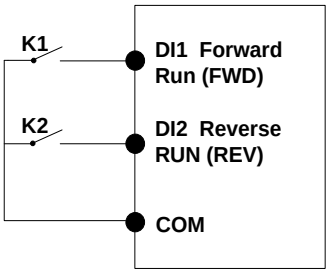


Figure1：Two-line mode 1

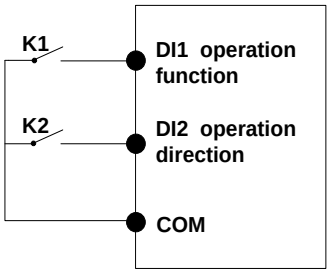


Figure 2：Two-line mode2

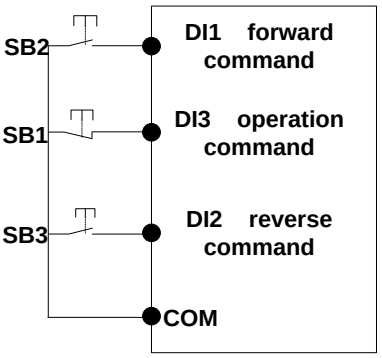


Figure 3：Three-line mode1

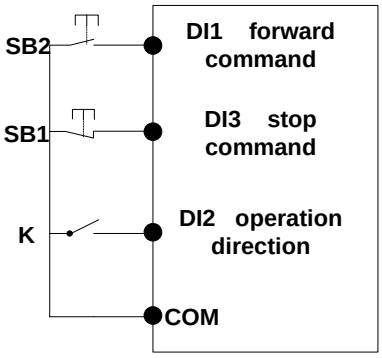


Figure 4：Three-line mode2

Two-line mode 1:

K1 is closed, the drive is running forward, K2 closed reverse operation, K1, K2 at the same time closed or disconnected, the inverter stops running.

Two-line mode 2:

In K1 closed state, K2 disconnect the inverter forward, K2 closed inverter reverse; K1 off the inverter to stop running.

Three-line mode 1:

DI3 is set to three-wire control function. When the SB1 button is closed, press the SB2 button. The inverter is forward running. Press the SB3 button to invert the inverter. When the SB1 button is off, the inverter will stop. During normal start-up and running, it is necessary to keep the SB1 button closed, and the commands of SB2 and SB3 buttons take effect during the closing operation. The running status of the inverter takes the last key action of the three buttons as the standard.

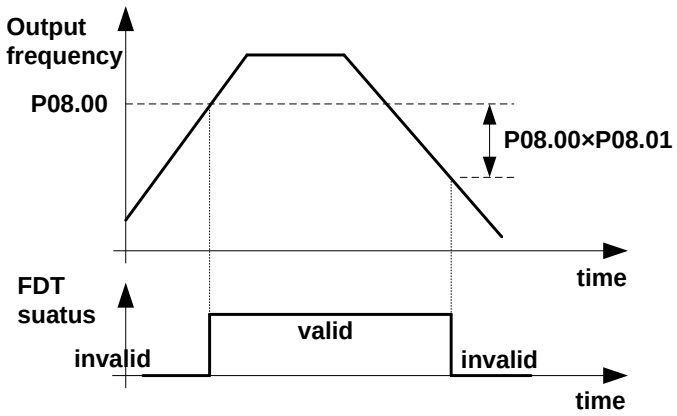
Three-line mode 2:

DI3 is set to three-wire control function. When the SB1 button is closed, press the SB2 button to run the inverter, K to switch the inverter forward, K to close the inverter and SB1 to turn off the inverter. During normal start-up and operation, it is necessary to keep the SB1 button closed and the command of the SB2 button effective during the closing operation.

P06.30	Digital input termimal filtering time	0.000～0.100s	0.010s	☆
P06.31	Terminal protection function	0：no protection When command is terminal ,power on and terminal effective,inverter will run 1：protection	0	★

		When command is terminal ,power on and terminal effective, inverter will not run ,so need terminal ineffective then effective,then inverter will run		
P06.32	DI terminal on/ready time	0.000s～30.000s	1.000s	★
07 Group Digital output				
r07.00	DO port status	Define as per bit,0:ineffective 1:effective Bit0:DO1 Bit1:D02 Bit2:relay, Bit 3-Bit7(reserved) Bit8:VDO1 Bit 9:VDO2	-	●
P07.01	DO1 Output terminal function group	0:no function 1:READY 2:RUN 3:Error1（coast to stop fault） 4:Error2（Error1 undervoltage） 5:warning output 6:swing frequency limit 7:torque limit 8:reverse running 9: upper limit frequency arrival 10:lower limit frequency arrival 1 11: lower limit frequency arrival2 12:FDT1 output frequency detection range 13:FDT2 output frequency detection range 14:setting frequency arrival 15:Desired frequency attained 1 P08.05 16:Desired frequency attaine 2P08.07 17:zero speed （stop without output） 18: zero speed （stop with output） 19:zero current status 20:output current exceed limit 21:counter 1 setting value arrival 22:counter 1 setting value arrival 23:Simple PLC cycle finish 24:IGBT temperature arrival 25:Drive overload pre-warning 26: motor overload pre-warning 27: motor overheat pre-warning 28:in off load 29:Acumulated on power time arrival 30:Acumulated running time arrival 31:Single running time arrival 32:Variable selector unit 1 output 33:Variable selector unit 2 output 34:Variable selector unit 3 output 35:Variable selector unit 4 output 36:Logic unit 1 output 37:Logic unit 2 output	0	☆
P07.02	DO2(HDO) Output terminal function group		0	☆
P07.03	R Output terminal function group(TA TB TC)		0	☆
P07.09	VDO1 output Terminal function		0	☆
P07.10	VDO2 output Terminal function		0	☆

		38:Logic unit 3 output 39:Logic unit 4 output 40: programmable relay 1 output 41: programmable relay 2 output 42:programmable relay 3 output 43:programmable relay 4 output 44:programmable relay 5 output 45:programmable relay 6 output		
P07.11	output logic negative	Define as per bit O:off;1:on(negative) Bit0:DO1 Bit1:DO2 Bit2:Relay Bit3-Bit7:reserved Notice:posive logic equivalent to Normal open point And negative logic equivalent to Normal close point	0	☆
P07.12	DO1 effective delay time	0.000s～30.000s	0.000s	☆
P07.13	DO1 ineffective delay time	0.000s～30.000s	0.000s	☆
P07.14	DO2 effective delay time	0.000s～30.000s	0.000s	☆
P07.15	DO2 ineffective delay time	0.000s～30.000s	0.000s	☆
P07.16	Relay 1 effective delay time	0.000s～30.000s	0.000s	☆
P07.17	Relay 1 ineffective delay time	0.000s～30.000s	0.000s	☆
P07.18	Relay 2 effective delay time	0.000s～30.000s	0.000s	☆
P07.19	Relay 2 effective delay time	0.000s～30.000s	0.000s	☆

08 Group Digital output setting				
P08.00	Frequency detection value (FDT1)	0.00Hz～maximum frequency(P01.06)	50.00Hz	☆
P08.01	Frequency detection hysteresis 1	0.0%～100.0% FDT1	5.0%	☆
P08.02	Frequency detection value 2(FDT2)	0.00Hz～maximum frequency(P01.06)	50.00Hz	☆
P08.03	Frequency detection hysteresis 2	0.0%～100.0% FDT2(P08.02)	5.0%	☆
FDT is used to check inverter output frequency,when output frequency is greater than frequency detection value,FDT effective,when output frequency is less than frequency detection value*(1- Frequency detection hysteresis),FDT ineffective;when output frequency is between the above two,FDT output keep no change,following is FDT chart  				
P08.04	Detection range of frequency arrival	0.0%～100.0% maximum frequency (P01.06) When output frequency is between command frequency ±P08.04*P01.06,corresponding DO output effective signal	3.0%	☆
P08.05	Desired frequency attained 1	0.00Hz～maximum frequency (P01.06)	50.00Hz	☆
P08.06	Any frequency reaching detection amplitude 1	0.0%～100.0% maximum frequency (P01.06)	3.0%	☆
P08.07	Desired frequency attained2	0.00Hz～maximum frequency(P01.06)	50.00Hz	☆
P08.08	Any frequency reaching detection amplitude 2	0.0%～100.0% maximum frequency (P01.06)	3.0%	☆
P08.09	Zero speed detection amplitude	0.00H～5.00Hz	0.25Hz	☆
P08.10	Zero current detection level	0.0%～100.0% rated motor current	5.0%	☆
P08.11	Zero current detection delay time	0.000～30.000s 0.000～30.000s Notice：When output current≤P08.10 and endure P08.11 time,corresponding DO output effective signal	0.100s	☆
P08.12	Output overcurrent	0.0%～300.0% motor rated time	200.0%	☆

	threshold			
P08.13	Overcurrent detection delay time	0.000～30.000sNotice：When output current≥P08.12 and endure P08.13 time,corresponding DOoutput effective signal	0.100s	☆
P08.14	IGBT Module temperature threshold	20.0～100.0℃	75.0℃	☆
P08.15	Accumulative power-on time arrival threshold	0～65530h	0h	☆
P08.16	Accumulative power-on time arrival threshold	0～65530h	0h	☆
P08.17	Action upon Running time arrival	0:continue to run;1:stop	0	☆
P08.18	This time running time arrival threshold	0～65530min	0min	☆
r08.19	This time Running time monitoring	0～65535min	0min	●

10 Group encoder type				
P10.01	Encoder type	0: ABZ 1: ABZUVW 2: Rotary 3: sin/cos encoder ➢ Consult factory when need PG card	0	★
P10.02	Encoder line number	1～65535 Rotary pulse number: 1024× rotary pair of poles	1024	★
P10.03	AB pulse direction	0: forward， 1: reverse ➢ If control mode is VC (with PG card)we can get this value by auto tuning for motor ➢ We can run motor with open loop,and observe r10.12 and r27.00 if they are in the same direction,if not,then change this value	0	★
P10.07	Rotating ratio molecule between motor and encoder	1～65535	1000	★
P10.08	Rotating ratio demonimator between motor and encoder	1～65535	1000	★
When encoder is not installed on the motor rotor axis,asynchronous motor vector control with encoder is effective by setting motor and encoder rotating speed ratio (P10.07 and P10.08) $\text{motor rotating speed} = \frac{P10.07}{P10.08} \times \text{encoder speed}$ For example：if motor rotating speed is 1500RPM and encoder speed 1000RPM，set P10.07=1500，P10.08=1000。				
P10.09	Encoder offline detection time	0.0(not detecting)～10.0s	2.0	★
P10.11	Encoder rotation filter time	0～32 speed loop control cycle	1	★
r10.12	encoder feedback rotating speed	Current rotating speed by measuing, unit: 0.01Hz/1Rpm ➢ unit set by P21.17。 ➢ no symbolic number，Function code r27.02:Bit5 for direction；keypad indicator 【REV】indicate direction	-	●
r10.13	Encoder current position	0 ～ 4*encoder pulse number -1 encoder current position refer Z pulse as zero point,motor forward running and one cyle to Z pulse ,then postion to zero	-	●
r10.14	Z pulse marking value	0 ～ 4*encoder pulse number-1 (it is used to monitor encoder slipping and AB being disturbed)	-	●

11 Group Motor 1 Parameter				
P11.00	Motor type	0：AC asynchronous motor	0	●
P11.02	Motor rated power	0.1kW～800.0kW ➢ when power is less than 1kw ,0.75kw set to 0.8 as per round up principle ,0.55kw motor set 0.6 ➢ when change motor rated power,AC drive will automatically set other parameter of motor name plate and motor model parameter **be careful to use**	Depend	★
P11.03	Motor rated voltage	10V～2000V	Depend	★
P11.04	Motor rated voltage	P11.02<30kW：0.01A P11.02>=30kW：0.1A	Depend	★
P11.05	Motor rated frequency	1.00Hz～600.00Hz	50.00Hz	★
P11.06	Motor rated RPM	1～60000rpm	Depend	★
P11.07	Motor rated power factor	0.500～1.000	Depend	★
r11.08	Motor rated torque	Read only,0.1Nm(P11.02<30KW); 1Nm(P11.02>30KW)	-	●
r11.09	Number of motor 1 pairs of pole	Read only,It will auto calculate as per motor rated frequency and rated rotating speed	-	●
P11.10	Auto-tune	0：no auto tuning 1：Stationary auto tuning of Asynchronous motor 2：Rotatoinal auto tuning of Asynchronous motor	0	★
1: Stationary auto tuning of Asynchronous motor When do auto tuning ,motor stationary ,it can get parameter P11.11 ～P11.13。 2: Rotatoinal auto tuning of Asynchronous motor When do auto tuning ,motor first stationary and rotary, ,it can get parameter P11.11～P11.18，as to close loop contro,it can get P10.03 encoder directioin Notice: it can do motor auto tune when command source is keypad				
P11.11	Stator resistor of Asynchronous motor	Unit:0.001Ω(<30kW) Unit:0.01mΩ(>=30kW)	Depend	★
P11.12	Rotor resistor of Asychronous motor	Unit:0.001Ω(<30kW) Unit:0.01mΩ(>=30kW)	Depend	★
P11.13	Leakage inductance of Asychronous motor	Unit:0.01mH(<30kW) Unit:0.001mH(>=30kW)	Depend	★
P11.14	Mutual inductance of Asynchronous motor	Unit:0.1mH(<30kW) Unit:0.01mH(>=30kW)	Depend	★
P11.15	No-load excitation current of Asynchronous motor	Unit:0.01A(<30kW) Unit:0.1A(>=30kW)	Depend	★
P11.16	Excitation saturation factor 1	At non rated-excitation status	1.100	★
P11.17	Excitation saturation factor 2	At non rated-excitation status	0.900	★
P11.18	Excitation saturation Factor3	At non rated-excitation status	0.800	★

12 Group Motor 1 VF control parameter				
P12.00	VF curve	0：linear VF 1：Multi-point VF 2：VF to the 1.3 3：1.7 power 4：2.0 power 5：VFcomplete separation 6：VF Half separation	0	★

➢ When the VF curve is straight line and power curve, the frequency-voltage curve is as follows:

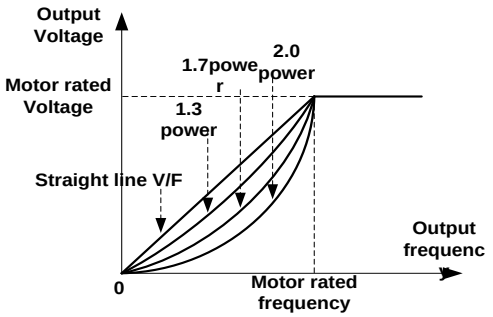


Figure 1：Straight line VF 和 1.3、1.7、2.0 power VF

➢ multi-stage line type VF curve：

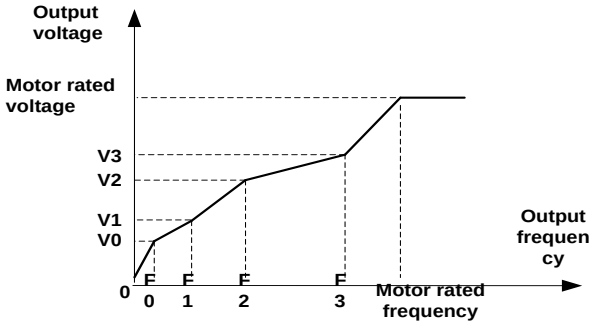


Figure 2： multi-stage line type VF curve

➢ VF full separation

The output voltage and output frequency are completely independent. The output frequency is determined by the frequency source. The output voltage is determined by P12.20. Suitable for applications such as variable frequency power or torque motors.

➢ VF semi-isolated

At this point the ratio of output voltage and output frequency given by the voltage source, the formula is as follows:：

$$\text{output voltage}=2 \times \text{Voltage source given} \times \text{output frequency} \times \frac{\text{motor rated voltage}}{\text{motor rated frequency}}$$

P12.01	Multi-point VF Frequency 1(F0)	0.00Hz～multi-point VF curve F1(P12.03)	0.00Hz	☆
P12.02	Multi-point VF Voltage 0(V0)	0.0%～100.0%	0.0%	☆
P12.03	Multi-point VF Frequency 1(F0)	multi-point VF curve F0(P12.01)～multi-point VF curve F2(P12.05)	50.00Hz	☆
P12.04	Multi-point VF Voltage 1(V1)	0.0%～100.0%	100.0%	☆
P12.05	Multi-point VF Frequency	multi-point VF curve F1(P12.03)～multi-point	50.00Hz	☆

	1(F2)	VF curve F3(P12.08)		
P12.06	Multi-point VF Voltage 2(V2)	0.0%～100.0%	100.0%	☆
P12.07	Multi-point VF Frequency 3(F3)	multi-point VF curveF2(P12.05)～6P00.00Hz	50.00Hz	☆
P12.08	Multi-point VF Voltage 3(V3)	0.0%～100.0%	100.0%	☆
P12.09	Torque boost	0%～200%	0%	☆
➢ Automatic torque boost When P12.09=0=Automatic torque boost,inverter will automatically compensate output voltage to improve torque in low frequency as per actual load ,it is useful for linear VF curve ➢ Manual torque boost ➢ When P12.09 not 0,it means manual torque output.Output frequency 0 torque increasing value=p12.09*motor stator resistance *rated excitation current,,increasing value will be gradully decreased as frequency increase ,if higher than 50% of motor rated frequency,increasing value will be zero ➢ Notice:manual torque boost is useful to linea and power curve				
P12.11	Slip compensation gain	0～200%	100%	☆
P12.12	Slip compensation filter time	0.01s～10.00s	1.00s	☆
P12.13	Oscillation suppression gains	0～2000	300	☆
P12.14	Oscillation suppression effective frequency range	Oscillation suppression effective range :100%～1200%	110%	☆
P12.15	Current limit function selection	0：ineffective 1：only adjust output voltage 2：adjust output frequency and voltage	2	★
P12.16	Current limit level	20%～180% drive rated current	150%	☆
P12.17	Weak magnetic zone current limit factor	optimize dynamic performance,10%～100%	0.60	☆
P12.20	Voltage source for VF separation	0：digital setting 1：AI1 2：AI2 3：AI3 (reserved) 4：AI4 (reserved） 5：pulse setting HDI 6：multiple speed 7：communication 8：PID	0	★
P12.21	digital setting for VF separation voltage	0.0%～100.0%	0.0%	☆
P12.22	VF separation voltage Accel and Decel time	0.00s～60.00s	1.00s	☆
P12.23	VF Separation voltage rates as per time	VF Separation Voltage variation every hour range:-50.00%～50.00%	0.00%	☆

13 Group Motor 1 vector control				
P13.00	Speed Proportional Gain ASR_P1	0.1～100.0	12.0	☆
P13.01	Speed Integral Time constant ASR_T1	0.001s～30.000s	0.100s	☆
P13.02	Speed Proportional Gain ASR_P2	0.1～100.0	8.0	☆
P13.03	Speed Integral Time constant ASR_T1	0.001s～30.000s	0.300s	☆
P13.04	ASR parameter Switching frequency 1	0.00Hz～ ASR switching frequency 2(P13.05)	5.00Hz	☆
P13.05	ASR parameter Switching frequency 2	ASR switching frequency 1～ 6P00.00Hz(P13.04)	10.00Hz	☆
P13.00 and P13.01 are Speed adjuster parameter for low-speed use,scope of action from zero to P13.04 P13.02 and P13.03 are Speed adjuster parameter for high-speed use,scope of action from P13.05 to maximum frequency P13.04-P13.05 Two sets of parameter for linear tansitions				
P13.06	Speed control torque limit source selection	Unit's digit：Electric torque limit source 0:digital setting 1～4:Ai1～Ai4 5:Pulse 6:communication Ten'unit：Electric torque limit source Same as unit'digit	00	★
P13.07	Electric torque limit	0.0%～300.0%	160.0%	☆
P13.08	Upper limit of brake torque	0.0%～300.0%	160.0%	☆
P13.12	Torque current directives filter time	Unit：current loop adjust cycle ,0～100	2	☆
P13.13	ACR Proportional Gain1	0.01～10.00	0.5	☆
P13.14	ACR Integral Time1	0.01～300.00ms	10.00ms	☆
P13.15	ACR Proportional Gain2	1～1000	0.5	☆
P13.16	ACR Integral Time2	0.01～300.00ms	10.00ms	☆
P13.17	Voltage feedforward Gain	0～100	0	★
P13.19	Voltage margin	0.0%～50.0%	5.0%	☆
P13.20	Flux weakening adjuster integral time	0.001s-5.000a	0.100s	☆
P13.22	Slip compensation	50%-200%	100%	☆
P13.23	SVC zero speed directives	0:no action 1:output DC current	0	★

14 Group Torque control				
P14.00	Torque setting	0：digital setting 1：AI1 2：AI2 3：AI3(reserved) 4：AI4(reserved) 5：HDI 6：communication	0	★
P14.01	Torque digital setting	-200.0～200.0%	0	☆
P14.02	Maximum torque	Benchmark 10.0%～300.0% Notice:torque benchmarks for analog inputs and high frequency pulse input as well as limit output torque in torque control	200.0%	★
P14.03	Torque Acceleration time	0.000s～60.000s Notice:Torque given time from zero to motor rated torque	0.100s	☆
P14.04	Torque control Deceleration time	0.000s～60.000s Notice:Torque given time from motor rated torque to zero	0.100s	☆
P14.05	Upper limit frequency of torque control	0：digital setting 1：AI1 2：AI2 3：AI3 4：AI4（expansion card） 5：HDI high frequency pulse input 6：communication	0	★
P14.06	Upper limit frequency of torque control	-100.0%～100.0%	100.0%	☆
P14.07	Reverse speed limit	Relative to maximum frequency：0.0%～100.0% Notice:Speed limit for reverse speed direction not specified by the speed limit source	40.0%	☆
P14.08	Torque setting over limit speed	0：match torque setting 1：speed control	0	★
P14.10	Static friction torque	0.0%～50.0%	10.0%	☆
P14.11	Static friction torque compensation	0.00Hz～50.00Hz	1.00Hz	★
P14.12	Dynamic friction factor	0.0%～50.0% Dynamic friction at rated speed Notice: motor sliding friction torque at rated rotating speed	0.0%	☆
P14.13	Dynamic friction starting value	0.0%～50.0%	0.0%	☆

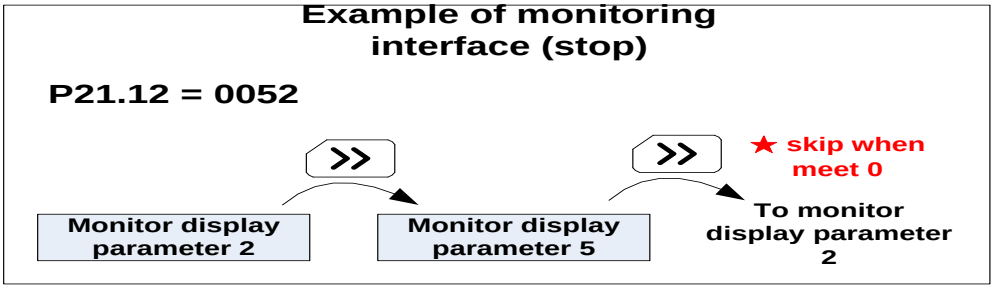
16 Group Energy saving control parameter				
r16.00	Electricity meter count (32BIT)	Unit:KW/H	-	●
r16.02	Output power	Unit:0.1kw,regen less than 0	-	●
r16.03	Power factor	-1.000～1.000	-	●
P16.04	Electricity meter zero clearing	0:no function；1111：clear to zero	0	☆
P16.05	Energy saving control	0：disable 1：enable	0	★
P16.06	Energy saving voltage limit	0%～50%	0%	☆
P16.07	Energy saving filter time	0.0～10.0s	2.0s	☆

20 Group User-defined parameter				
P20.00	User-defined parameter1		00.00	☆
P20.01	User-defined parameter2		00.00	☆
P20.02	User-defined parameter3		00.00	☆
P20.03	User-defined parameter4		00.00	☆
P20.04	User-defined parameter5		00.00	☆
P20.05	User-defined parameter6		00.00	☆
P20.06	User-defined parameter7		00.00	☆
P20.07	User-defined parameter8		00.00	☆
P20.08	User-defined parameter9		00.00	☆
P20.09	User-defined parameter10	00.00～63.99	00.00	☆
P20.10	User-defined parameter11	Visible in user-defined menu mode	00.00	☆
P20.11	User-defined parameter12		00.00	☆
P20.12	User-defined parameter13		00.00	☆
P20.13	User-defined parameter14		00.00	☆
P20.14	User-defined parameter15		00.00	☆
P20.15	User-defined parameter16		00.00	☆
P20.16	User-defined parameter17		00.00	☆
P20.17	User-defined parameter18		00.00	☆
P20.18	User-defined parameter19		00.00	☆
P20.19	User-defined parameter20		00.00	☆

21 Group Keypad and Display Group				
P21.00	LCD language option	0: Chinese 1: English **this parameter valid in VFD500**	0	☆
P21.02	MKfunction option	0：no function; 1：Forward Jog 2：Reverse Jog; 3：Forward/reverse Switch 4：Quick stop; 5：coast to stop **6：Curse left shift(LCD keypad) VFD500**	1	★
P21.03	STOP function	0:Valid only at Keypad Control 1:valid at all command Channels	1	☆
P21.04	Monitoring display1	00.00～99.99	27.00	☆
P21.05	Monitoring display2	00.00～99.99	27.01	☆
P21.06	Monitoring display3	00.00～99.99	27.06	☆
P21.07	Monitoring display4	00.00～99.99	27.05	☆
P21.08	Monitoring display5	00.00～99.99	27.03	☆
P21.09	Monitoring display6	00.00～99.99	27.08	☆
P21.10	Monitoring display7	00.00～99.99	06.00	☆
P21.11	Running status Monitoring display parameter option	Unit'digit to Thousand'digit set 1-4 monitor parameter 0 means no display，1～7 corresponds to monitor parameter 1～7 Unit'digit：choose first monitoring data，0～7 Ten's digit：choose second monitoring data，0～7 Hundred's digit：choose third monitoring data，0～7 Thousand's digit：choose fourth monitoring display，0～7	5321	☆
P21.22	Stop status Monitoring display parameter option	Same as P21.11	0052	☆

KDE300A digital keyboard monitoring interface supports up to 4 monitoring volume. Monitoring variables in running status and monitoring variables in stop status are set by P21.11 and P21.12, respectively. Press 【SHIFT】 key on the keyboard to switch the monitoring volume from low to high of P21.11 or P21.12, Encountered "0" then skip, cycle monitoring.

Take the shutdown monitoring interface for example, P21.12 = 0052, there are 2 monitoring variables, which are r27.01 (monitor display parameter 2, P21.05 = 27.01) and r27.03 (monitor display parameter 5, P21.08 = 27.03), press the 【SHIFT】 key on the keyboard to switch between the two monitors, as shown below.



The rules for running the monitoring interface are the same as the shutdown monitoring interface, and will not be repeated

P21.13	Digital keypad personalized setting	**Unit's digit: quick editing function selection** **0: invalid** 1：Numeric frequency setting 2：Numeric torque setting 3：PID digital setting 0 Note: The quick editing function means that if the current monitoring value is the output frequency or command frequency under the monitoring status, press the [ENTER] key to enter the parameter editing interface directly. The edited parameters are set by the ones digit of this function code. **Ten's digit: monitor pointer reset selection** 0: When the display status is in the monitoring status from other status, or when the running monitoring status and stop monitoring status are switched, the previously recorded monitoring pointer position will be restored. 1: When the display status is in the monitoring status by other status, or when the monitoring status of running status and stop status are switched, the monitor pointer will be reset to the ones of P21.11 or P21.12. **Note: when power-on, the shutdown monitoring pointer points to the P21.12 bits, the operation monitoring pointer points to P21.11 bits**	01	★
P21.14	Load speed display factor	0.001～65.000	30.000	☆
P21.15	Load speed decimal point digit	0～3	0	☆
r21.16	Load speed display	Load speed =P27.00*P21.10 Decimal point digit defined by P21.11	-	●
P21.17	Speed display unit	0：0.01Hz；1: 1Rpm ➢ r10.12, r27.00, r27.01 displaying unit selection	0	★

22 Group AC drive data				
P22.00	Carrier/swithcing frequency	Depend on drives power ≤7.5kW: 1kHz～12.0kHz 11kW～45kW: 1kHz～8kHz ≥55kw: 1kHz～4kHz	Depend	☆
P22.01	Carrier frequency adjustment	Unit'digit：adjustment as per Rotation 0:No；1:Yes Ten'digit：adjustment as per Temperature 0 no；1：yes	00	★
P22.02	Low speed carrier frequency	1.0kHz～15.0kHz	Depend	☆
P22.03	High speed carrier frequency	1.0kHz～15.0kHz	Depend	☆
P22.04	Carrier frequency switching point 1	0.00Hz～600.00Hz	10.00Hz	☆
P22.05	Carrier frequency switching point2	0.00Hz～600.00Hz	50.00Hz	☆
P22.06	PWM way	0：SVPWM 1：SVPWM+DPWM 2：PWM at random 3：SPWM	0	★
P22.07	DPWM switching point	10%～100%	30%	★
P22.08	Modulating limit	50%～110%	105%	★
P22.10	AVR function	0:diabled 1:enabled	1	★
P22.11	Energy braking voltage funtion	0-disabled 1-enabled 2-only enable when ramp to stop	1	☆
P22.12	Energy braking voltage	320V～400V(220V level) 600V～800V(380V level) 690V～900V(480V level) 950V～1250V(690V level)	Depend	☆
P22.13	Output phase switch	0:no Operation 1:output phase switch(equal to change Phase between V and W)	0	★
P22.14	Cooling method (fan control)	0:effective when running 1:Forced control(effective when power on) 2:adjustable as per drive temperature	0	☆
P22.15	GP drive type	0-G type;1-P type ➢ G means normal duty (constant torque load) ➢ P means light duty such as fan and pump	0	★
r22.16	Drive rated power	Read only Unit:0.1kw	-	●
r22.17	Drive rated Voltage	Read only Unit:V	-	●
r22.18	Drive rated current	Read only Unit:0.1A	-	●

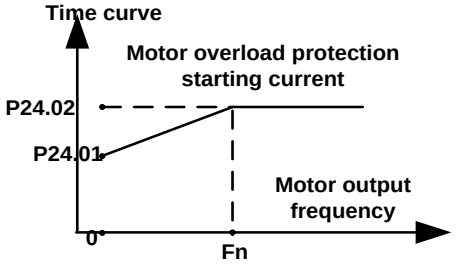
23 Group Drive protection function setting				
P23.00	Bus voltage control option	Unit'digit : 0:overvoltage stall disabled 1:overvoltage stall enabled 2:overvoltage stall self-adjustable Ten'unit: 0:undervoltage stall disabled 1:undervoltage stall deceleration(decelerate to zero speed and run at zero speed) 2: undervoltage stall deceleration(decelerate to zero and stop)	01	★
P23.01	Overvoltage stall threshold	220V Level: 320V～400V 380V Level: 540V～800V 480V Level：650V～950V 690V Level: 950V～1250V	Depend	★
P23.02	Undervoltage threshold	220V level: 160V～300V 380V level: 350V～520V 480V level: 400V～650V 690V level: 650V～900V	Depend	★
P23.03	Overvoltage stall ratio	0～10.0	1.0	☆
P23.04	undervoltage stall ratio	0～20.0	4.0	☆
P23.05	Undervoltage trip threshold	220V Level:160V～300V 380V Level:350V～520V 480V Level:400V～650V 660V Level:650V～900V	Depend	★
P23.06	Undervoltage fault detecting time	0.0s～30.0s	1.0s	☆
P23.07	Rapidcurrent limit	0:disabled 1:enabled	1	★
P23.10	Over-speed detection value	0.0%～120.0% maximum frequency	120.0%	☆
P23.11	Over-speed detection time	0.0s～30.0s 0.：shielding	1.0s	☆
P23.12	Detection value of too large speed deviation	0.0%～1P00.0%(motor rated frequency)	20.0%	☆
P23.13	Detection value of too large speed deviation	0.0s～30.0s 0.0：shielding	0.0s	☆
P23.14	Input phase loss detection time	0.0s～30.0s 0.0：forbidden	6.0s	☆
P23.15	Output phase loss inbalance detecting	0%～100%	30%	☆
P23.18	Fault protection action selection 1	Unit's digit : input phase loss 0: coast to stop 1: Emergent stop 2: Stop as per stop mode 3: continue to Run	0000	☆

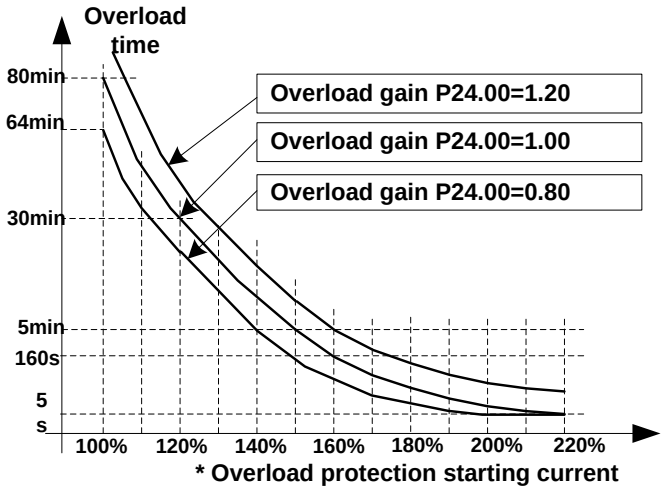
		Ten’unit: user self-defined fault 1 same as Unit’s digit Hundred’unit: user self-defined fault 2 same as Unit’digit Thousand’s unit: communication fault same as unit’s digit		
P23.19	Fault protection action selection 2	Unit’s digit: motor overload 0: coast to stop 1: emergent stop 2: stop as per stop mode 3: continue to run Ten’unit: motor overheat same as unit’digit Hundred’unit: too large speed deviation same as unit’digit Thousand’s unit: motor over speed same as Unit’digit	0000	☆
P23.20	Fault protection action selection 3	Unit’s digit: PID feedback lost during running 0: coast to stop 1: fast stop 2: stop as per stop mode 3: continue to run Ten’unit: Reserved same as unit’digit Hundred’unit: reserved same as unit’digit thousand’unit: reserved same as unit’digit	0000	☆
P23.21	Fault protection action selection 4	Unit’s digit: output phase loss 0: coast to stop 1: fast stop 2: stop as per stop mode Ten’unit: EEPROM fault 0: coast to stop 1: fast stop 2: stop as per stop mode 3: continue to run Hundred’s unit: PG card fault(reserved) 0: coast to stop 1: fast stop 2: stop as per stop mode 3: continue to run Thousand’s unit: off load fault 0: coast to stop 1: fast stop 2: stop as per stop mode 3: continue to run	0000	☆

P23.24	fault reset	Define as per bit: bit0-undervoltage;bit1- inverter overload bit2-inverter overheat ;bit3-motor overload bit4-motor overheat;bit5-user'fault 1 bit6- user'fault 2; bit7～15 reserved	H00000000 L00000000	☆
P23.25	fault source for auto reset(auto reset by time gap)	Define as per bit: bit0-overcurrent during acceleration;bit1-overcurrent during deceleration bit2-overcurrent during constant speed;bit3-over voltage during acceleration bit4-overvoltage during deceleratoin;bit5-overvoltage during bit6-inverter undervoltage;bit7-input phase loss bit8-inverter overload;bit9-inverter overheat bit10-motor overload;bit11-motor overheat bit12-user'fault 1;bit13-user'fault 2 bit14-Reserved;bit15-Reserved	H00000000 L00000000	☆
P23.26	Fault auto Reset times	0～99	0	☆
P23.27	Numberic output Action at fault reset	0:disabled 1:enabled	0	☆
P23.28	Interval time of fault auto reset	0.1s～300.0s	0.5s	☆
P23.29	Fault auto reset times clearing time	0.1s～3600.0s	10.0s	☆
P23.30	continuing Running frequency selection when trip	0：run at current frequency 1：run at setted frequency 2：run at upper limite frequency 3：run at lower limit frequency 4：run at abnormal back-up frequency	0	☆
P23.31	abnormal back-up frequency	0.0%～100.0%(maximum frequency)	5.0%	☆

24 Group motor Protection parameter				
P24.00	Motor overload protection gain	0.20～10.00	1.00	☆
P24.01	Motor overload starting current at zero speed	50.0%～150.0%	100.0%	☆
P24.02	Motor overload starting current at Rated speed	50.0%～150.0%	115.0%	☆

Motor in self cooling mode, heat dissipation is poor when in low frequency but good in condition of high frequency . P24.01 adn P24.02 is used to set the starting point of zero and rated speed overload current in order to obtain a more reasonable under different speed overload protection Time curve





Left: Motor overload protection starting current Right: Motor Overload Protection Curve with Different Overload Protection Gains

Motor overload Overload protection of motor 2 only when P24.04 bits equals one or overload protection of motor 1 or P24.08 bits equals one. P24.00 is used to adjust the overload inverse time curve time, as shown in the right figure above, the minimum motor overload time is 5.0s.

Note: Users need to correctly set the three parameters of P24.00, P24.01 and P24.02 according to the actual overload capacity of the motor. If set unreasonable, prone to motor overheating damage and the inverter is not timely warning of the danger of protection.

P24.04	Motor 1 protection option	Unit'digit:motor protection selection 0:No 1:overload protection(motor 1) 2:PTC1000 3:PTC100	01	☆

		ten'unit:temperature detecting channel 0:AI3(optioncard) 1:AI4(option card)		
P24.05	Motor 1 overheat protection threshold	0.0℃～200.0℃	120.0℃	☆
P24.06	Motor 1 overheat warning threshold	50%～100%	80%	☆
r24.07	Motor 1 temperature read data	Unit 0.1℃	-	●
P24.08	Motor 2 protection option	Unit'digit:motor protection selectoin 0:no 1:overload protection(motor 2) 2:PTC1000 3:PTC100 Ten'unit: temperature detecting channel 0:AI3 1:AI4	01	☆
P24.09	Motor 2 overheat protection threshold	0.0℃～200.0℃	120.0℃	☆
P24.10	Motor 2 overheat warning threshold	50%～100%	80%	☆
r24.11	Motor 2 temperature read data	Unit 0.1℃	-	●
Motor can be protected from overload or overheat by setting P24.04 and P24.08 via motor1/2 protection				
P24.12	Off load protection	0:effective 1:ineffective	0	☆
P24.13	Off load detection level	0.0%-100%	10.0%	☆
P24.14	Off load detection time	0.000s-60.000s	1.000s	☆

25 Group Fault tracking parameter				
r25.00	current fault type	- see detail chapter 6 fault diagnosis and solution	-	●
r25.01	Output frequency at fault	-	-	●
r25.02	Output current at fault	-	-	●
r25.03	Bus voltage at fault	-	-	●
r25.04	Running mode status 1at fault	- parameter P27.10	-	●
r25.05	Input terminal status at fault	-	-	●
r25.06	Working time at fault	-	-	●
r25.07	Accumulated working time at fault	-	-	●
r25.08	Frequency source at fault	-	-	●
r25.09	Torque source at fault	-	-	●
r25.10	Encoder speed at fault	-	-	●
r25.11	Motor	-	-	●
r25.12	Running mode status 2 1at fault	- parameter P27.11	-	●
r25.13	Input terminal status at fault	-	-	●
r25.14	Heat sink temperature at fault	-	-	●
r25.15	Low-level fault	-	-	●
26 Group Fault recording parameter				
r26.00	Last fault 1trip type	Compared to P25.00	-	●
r26.01	Output frequency at fault	-	-	●
r26.02	Output current at fault	-	-	●
r26.03	Bus voltage at fault	-	-	●
r26.04	Running mode status 1at fault	- parameter P27.10	-	●
r26.05	Input terminal status at fault	-	-	●
r26.06	working time at fault	-	-	●
r26.07	Accumulated working time at	-	-	●

	fault			
r26.08	Last fault 2 trip type	-	-	●
r26.09	Output frequency at fault	-	-	●
r26.10	Output current at fault	-	-	●
r26.11	Bus voltage at fault	-	-	●
r26.12	Running mode status 1at fault	-parameter P27.10	-	●
r26.13	Input terminal status at fault	-	-	●
r26.14	working time at fault	-	-	●
r26.15	Accumulated working time at fault	-	-	●
r26.16	Last fault 3 trip type	-	-	●
r26.17	Output frequency at fault	-	-	●
r26.18	Output current at faul	-	-	●
r26.19	Bus voltage at fault	-	-	●
r26.20	Running mode status 1at fault	- parameter P27.10	-	●
r26.21	Input terminal status at fault	-	-	●
r26.22	working time at fault	-	-	●
r26.23	Accumulated working time atfault		-	●
27 Group Monitoring parameter				
r27.00	Running frequency	It can set unit as per Parameter P21.07	-	●
r27.01	Set frequency	It can set unit as per Parameter P21.07	-	●
r27.02	Direction indicator	bit0：direction of running frequency bit1：direction of setting frequency bit2：direction of main frequency bit3：direction of auxiliary frequency bit4：direction of UpDown offset bit5 reserved	-	●
r27.03	Bus voltage	Unit：1V	-	●
r27.04	VF separation setting	unit：0.1%	-	●

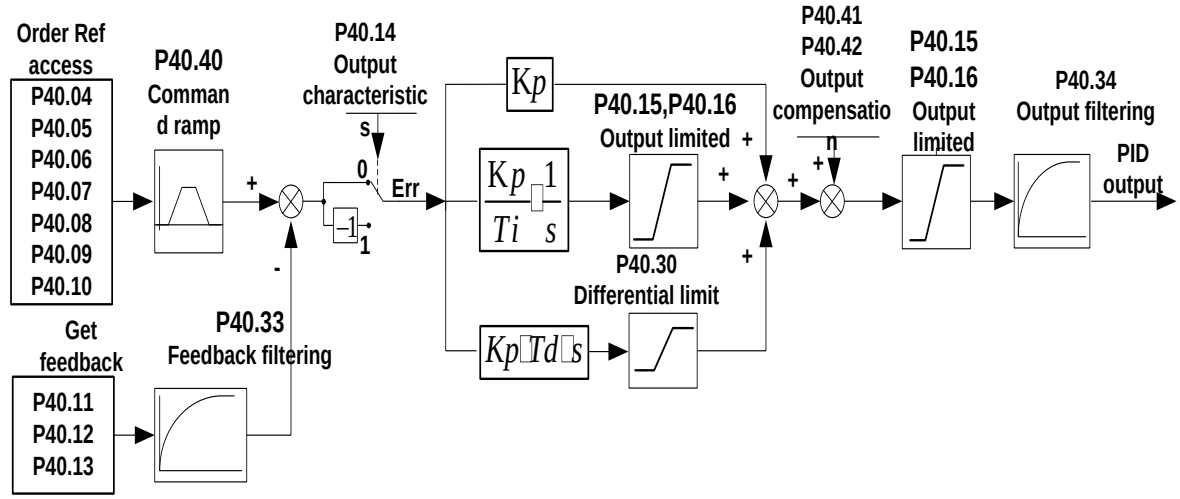
r27.05	Output voltage	unit：0.1V	-	●
r27.06	Output current	unit：0.1A	-	●
r27.07	Output current percentage	unit：0.1%(100% of motor rated current)	-	●
r27.08	Output torque	0.1%	-	●
r27.09	Torque setting	0.1%	-	●
r27.10	Drives running mode status 1	Bit0:Running status 0-Stop;1-Run Bit1:Motor direction0-Forward;1-Reverse Bit2:Ready signal:0-not ready;1-ready Bit3:fault status 0-no fault;1-fault Bit4～5:fault type:0-free stop;1-fast stop;2-stop as per stop mode；3：continue to run Bit6:jog status:0-no jog;1-jog status Bit7:Auto tune :0-no;1-yes Bit8:DC braking:0-Non DC braking;1-DC braking Bit9:factory testing mode:0-no;1-yes Bit10～11:Acceleration and Deceleration: 0:stop/zero output;1:speed up;2:speed up;3:speed up Bit12:reserved Bit13:current limit status:0-no;1-yes Bit14:overvoltage stall adjustment:0-no ;1-yes Bit15:undervoltage stall adjustment :0-no;1-yes	-	●
r27.11	Drives running mode2	Bit0～1:current command source:0-keypad;1-terminal ;2-communicatoin Bit2～3:motor option:0-motor 1;1-motor 2 Bit4～5:current motor control:0-VF;1-SVC;2-VC Bit6～7:current running mode:0-speed;1-torque;2-position	-	●
r27.14	Accumulated power on time	Unit:hour	-	●
r27.15	Accumulated running time	Unit:hour	-	●
r27.18	Heat sink temperature	Unit:0.1 ℃	-	●
r27.19	Main frequency	Unit:0.01Hz	-	●
r27.20	Auxiliary frequency	unit:0.01Hz	-	●
r27.21	Up Down offset frequency	unit:0.01Hz	-	●
30 Group Modbus communication parameter				
P30.00	Communication type	0:Modbus; 1～2:can Open/profibus and reserved	0	★
P30.01	Drive Address	0～247	1	★
P30.02	Modbus baud rate	0:1200; 1:2400 2:4800; 3:9600	3	★

		4:19200; 5:38400 6:57600; 7:115200		
P30.03	Modbus data format	0: 1-8-N-1 (1 start bit +8 data bits +1 stop bits) 1: 1-8-E-1 (1start bit +8 data bits +1 even parity +1 stop bit) 2: 1-8-0-1 (1 star bit+8 data bits +1odd parity+1 stop bits) 3: 1-8-N-2 (1 star bit+8 data bits+2 stop bits) 4: 1-8-E-2 (1 star bits+8 data bit+1 even parity+2 stop bits) 5: 1-8-0-2 (1 start bit +8 data bits+1 odd parity+2 stop bits)	0	★
P30.04	Modbus response delay	1～20ms	2ms	★
P30.05	Modbus overtime	0.0s(disabled)～60.0s(works for master-slave system) When this function code effective,if slave do not receive data from master overtime,it will trip as Er.485	0.0s	★
r30.06	Number of process data received	Add 1 after receive one data，0～65535 count in cycle	-	●
r30.07	Number of process data transmission	Add 1 after transmiss one data，0～65536 count in cycle	-	●
r30.08	Number of CRC wrong data received	Add 1 after receive CRC wrong Data ,0～65535 count in cycle；to tell intension of communication disturbance	-	●
P30.09	Modbus master-slave option	0: slave 1: master(sent by broadcast)	0	★
P30.10	Slave memory when inverter as master	1～9 corresponds to 0x7001～0x7009	1	☆
P30.11	Data sent by Master	0:output frequency 1:set frequency 2:output torque 3:set torque 4:PID setting 5:PID feedback 6:output current	0	☆
P30.12	Sending interval of Master	0.010～10.000s	0.01s	☆
P30.13	Receiving proportaionality factor of slave	-10.000～10.000	1.000	☆
P30.14	Communication special register speed unit	0: 0.01% 1: 0.01Hz 2: 1Rpm	0	☆

40 Group PID function				
r40.00	PID output value	Read only unit:0.1%	-	●
r40.01	PID set value	Read only unit:0.1%	-	●
r40.02	PID feedback value	Read only unit:0.1%	-	●
r40.03	PID deviation value	Read only unit:0.1%	-	●

PID through the target signal (command) and the controlled amount of the difference between the feedback signal proportional (P), integral (I) and differential (D) operation, adjust the inverter output frequency, etc., to achieve closed-loop system, the controlled amount Stable at the target value.

KDE300A built-in process PID structure as shown below, suitable for flow control, pressure control, temperature control and tension control applications.



P40.04	PID main setting source **(ref1)**	0：digital setting 1：AI1 2：AI2 3：AI3 4：AI4(reserved) 5：HDI high frequency pulse 6：communication	0	☆
P40.05	PID Auxilary setting source **(ref2)**	Same as P40.04	0	☆
P40.06	PID preset setting 0	0.0%～100.0%	0.0%	☆
P40.07	PID preset setting 1	0.0%～100.0%	0.0%	☆
P40.08	PID preset setting 2	0.0%～100.0%	0.0%	☆
P40.09	PID preset setting 3	0.0%～100.0%	0.0%	☆
P40.10	PID setting source option	0:ref1 1:ref1+ref2 2:ref1-ref2 3:ref1*ref2	0	☆

		4:ref1/ref2 5:Min(ref1,ref2) 6:Max(ref1,ref2) 7(ref1+ref2)/2 8:sqrt(ref1） 9:sqrt(ref1-ref2) 10:sqrt(ref1+ref2) 11:sqrt(ref1)+sqrt(ref2) 12:ref1 and ref2 conversion Sqrt means square root calculation,eg:sqrt(50.0%)＝70.7%		
P40.11	PID feedback source1**(fdb1)**	0:AI1 1:AI2 2:AI3 3:AI4 4: PLUSE(HDI) 5: Communication 6: Motor rated output current 7: Motor rated output frequency 8: Motor rated output torque 9: Motor rated output frequency	0	☆
P40.12	PID feedback source 2**(fdb2)**	Same as P40.11	0	☆
P40.13	PID feedback function selection	0:fdb1 1:fdb1+fdb2 2:fdb1-fdb2 3:fdb1*fdb2 4:fdb1/fdb2 5:Min(fdb1,fdb2) 6:Max(fdb1,fdb2) 7: (ref1+ref2)/2 8:sqrt(fdb1） 9:sqrt(fdb1-fdb2) 10:sqrt(fdb1+fdb2) 11:sqrt(fdb1)+sqrt(fdb2) 12:fdb1and fdb2 switchover Sqrt means square root calculation,eg:sqrt(50.0%)＝70.7%	0	☆
P40.14	PID output feature	0-positive 1-negative	0	☆
P40.15	Upper limit of PID output	-100.0%～100.0%	100.0%	☆
P40.16	lower limit of PID output	-100.0%～100.0%	0.0%	☆
P40.17	Proportaional gain KP1	0.00～10.00	0.50	☆

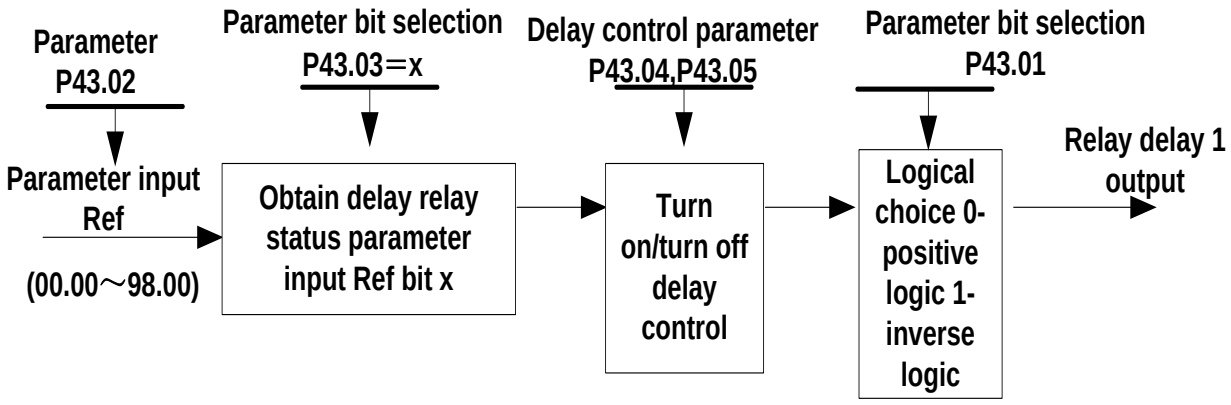
P40.18	Integral time TI1	0.01s～10.00s	0.50s	☆
P40.19	Differential time TD1	0.000s～10.000s	0.000s	☆
P40.20	Proportaional gain KP2	0.00～10.00	0.50	☆
P40.21	Integral time TI2	0.01s～10.00s	0.50s	☆
P40.22	Differential time TD2	0.00s～10.00s	0.000s	☆
P40.23	PID parameter switchover condition	0：no switchover 1：switchover via DI 2：automatic switchover based on deviation	0	☆
P40.24	PID parameter switchover devation 1	0.0%～40-25	20.0%	☆
P40.25	PID parameter switchover devation 2	40-24～100.0%	80.0%	☆
P40.26	PID integral separation threshold	0.0%～100.0%	100.0%	☆
P40.27	PID initial value	0.0%～100.0%	0.0%	☆
P40.28	PID intial value holding time	0.00～650.00s	0.00s	☆
P40.29	PID deviation limit	0.0%～100.0%	0.0%	☆
P40.30	PID differential limit	0.00%～100.00%	0.10%	☆
P40.31	Maximum deviation between two PID outputs in forward direction	0.00%～100.00%	1.00%	☆
P40.32	Maximum deviation between two PID outputs in reverse direction	0.00%～100.00%	1.00%	☆
P40.33	PID feedback filter time	0.000～30.000s	0.010s	☆
P40.34	PID output filter time	0.000～30.000s	0.010s	☆
P40.35	Detection value of PID feedback loss (lower limit)	0.0%(no detection)～100.0%	0.0%	☆
P40.36	Detection time of PID feedback loss	0.000s～30.000s	0.000s	☆
P40.37	Detection value of PID feedback	0.0%～100.0%(no detection)	100.0%	☆

	loss(upper limit)			
P40.38	Upper Detection time of PID feedback loss	0.000s～30.000s	0.000s	☆
P40.39	PID operation at stop	0-No PID operation at stop 1-PID operation at stop	0	☆
P40.40	PID command for accel and decel time	0.0s～6000.0s	0.0s	☆
P40.41	PID offset selection	0-digital setting 1-AI1 2-AI2 3-AI3(option card)	0	☆
P40.42	PID offset digital setting	-100.0%～100.0%	0.0%	☆
41 Group Sleeping function				
P41.00	Sleep mode selection	0-no sleep functoin 1-sleep by frequency 2-AI1 3-AI2 4-AI3(option card)	0	☆
P41.01	Sleep setting value by frequency	0.00Hz～P43.02	0.00Hz	☆
P41.02	Wake up threshold by frequency	41.01～maximum frequency	0.00Hz	☆
P41.03	Sleep setting value by pressure	41.04～10.00V	0.00V	☆
P41.04	Wake up threshold by pressure	0.00V～P41.03	0.00V	☆
P41.05	Sleep delay time	0.0s～6000.0s	0.0s	☆
P41.06	Wake up delay up	0.0s～6000.0s	0.0s	☆
P41.07	Sleep decelerating time	0.00(coast to stop)～60000s Setting value decide by P03.16 P03.16 = 2, 0.00～600.00s; P03.16 = 1, 0.0s～6000.0s; P03.16 = 0, 0s～60000s P41.07 set to 0,sleeping stop mode to free coast。	0.00s	☆
42 Group Simple PLC				
r42.00	PLC current running mode	Read only	-	●
r42.01	PLC current running remaining time	Read only	-	●

r42.02	PLC times of cycles	Read only	-	●
P42.03	Simple PLC running mode	Unit'digit: 0: single cycle then stop 1: single cycle then keep last speed 2: recycle 3: Plc reset when single cycle stop Ten's digit: 0:power off without saving 1:power off with saving Hundred'digit: 0:stop without saving 1:stop with saving	003	☆
P42.04	PLC running times	1～60000	1	☆
P42.05	PLC step 1 running time	0.0～6553.5 unit depend on P42.21 Notice:Running time do not conclude acceleration and deceleration time,same as following	0.0	☆
P42.06	PLC step 2 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.07	PLC step 3 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.08	PLC step 4 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.09	PLC step 5 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.10	PLC step 6 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.11	PLC step 7 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.12	PLC step 8 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.13	PLC step 9 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.14	PLC step 10 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.15	PLC step 11 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.16	PLC step 12 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.17	PLC step 13 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.18	PLC step 14 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.19	PLC step 15 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.20	PLC step 16 running time	0.0～6553.5 unit depend on P42.21	0.0	☆
P42.21	PLC running time	0:S; 1:minute; 2: hour	0	☆

	unit			
P42.22	PLC step 1-4 ACCEL/DECEL rate selector	Unit'digit:step 1 ACCEL/DECEL rate selector ten'digit: step 2 ACCEL/DECEL rate selector Hundred's: step 3 ACCEL/DECEL rate selector Thousand'unit:step 4 ACCEL/DECEL rate selector 0- ACCEL/DECEL rate 1 1- ACCEL/DECEL rate 2 2- ACCEL/DECEL rate 3 3- ACCEL/DECEL rate 4	0000	☆
P42.23	PLC step 5-8 ACCEL/DECEL rate selector	Unit'digit: ACCEL/DECEL rate 5 Ten'digit: ACCEL/DECEL rate 6 Hundred'digit: ACCEL/DECEL rate 7 Thousand'digit: ACCEL/DECEL rate 8 0- ACCEL/DECEL rate 1 1- ACCEL/DECEL rate 2 2- ACCEL/DECEL rate 3 3- ACCEL/DECEL rate 4	0000	☆
P42.24	PLC step 9-12 ACCEL/DECEL rate selector	Unit'digit: ACCEL/DECEL rate 9 ten'digit: ACCEL/DECEL rate 10 Hundred'digit: ACCEL/DECEL rate 11 Thousand'digit: ACCEL/DECEL rate 12 0- ACCEL/DECEL rate 1 1- ACCEL/DECEL rate 2 2- ACCEL/DECEL rate 3 3- ACCEL/DECEL rate 4	0000	☆
P42.25	PLC step 13-16 ACCEL/DECEL rate selector	Unit's Digit: ACCEL/DECEL rate 13 Ten'Digit: ACCEL/DECEL rate 14 Hundred'digit: ACCEL/DECEL rate 15 Thousand's digit: ACCEL/DECEL rate 16 0- ACCEL/DECEL rate 1 1- ACCEL/DECEL rate 2 2- ACCEL/DECEL rate 3 3- ACCEL/DECEL rate 4	0000	☆
P42.26	PLC stop decelerating time	0.01～60000s Setting value decide by P03.16 P03.16 = 2, 0.00～600.00s; P03.16 = 1, 0.0s～6000.0s; P03.16 = 0, 0s～60000s	20.00s	☆
43 Group Programmingl delay-relay				
r43.00	Virtual delay relay 1～6 output status	Read only,define as per bit:0000～1111 Bit0:delay relay 1; Bit1: delay relay 2 Bit2: delay relay 3; Bit3: delay relay 4 Bit4: delay relay 5; Bit5: delay relay 6	-	●

KDE300A inverter built-in 6 delay relay. The delay relay can collect the status of 0 ~ 15 bits of all parameters that can be viewed in the function code table, and finally output the delay relay status after delay processing and logic selection. Can be used for Di / Do, comparator / logic unit output delay and other functions, but also as a virtual relay.

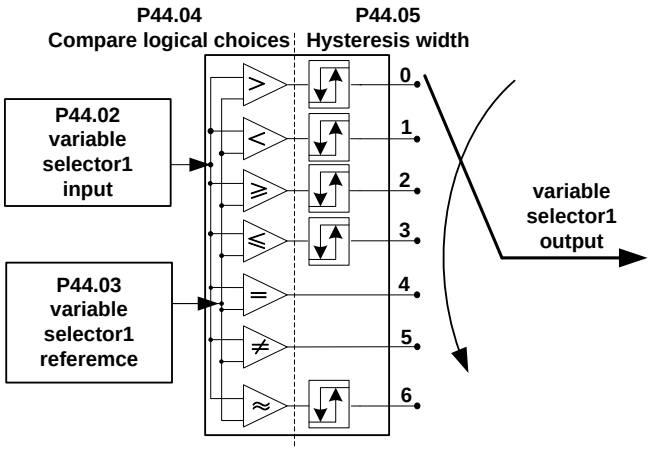


delay relay 1 block diagram

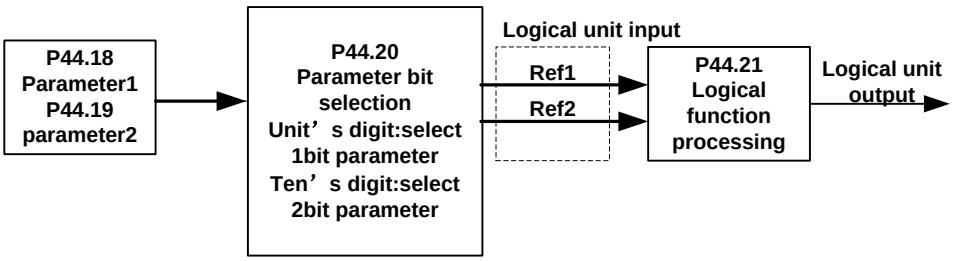
The picture shows the delay relay 1 block diagram, delay relays 2 to 6 and so on. Delay relays can be combined with comparator units and logic units for more complex applications.

P43.01	Delay relay 1-6 logicl	000000B-111111B	0	☆
P43.02	Delay relay 1 input parameter selection	00.00-98.99(function code index)	0000	☆
P43.03	Delay relay 1 input bit selection	0-15	0000	☆
P43.04	Delay relay 1 on delay time	0.0s～3000.0s	0000	☆
P43.05	Delay relay 1 off delay time	0.0s～3000.0s	0000	☆
P43.06	Delay relay 2 input parameter selection	00.00-98.99(function code index)	0000	☆
P43.07	Delay relay 2 input bit selection	0-15	0000	☆
P43.08	Delay relay 2 on delay time	0.0s～3000.0s	0.0s	☆
P43.09	Delay relay 2 off delay time	0.0s～3000.0s	0.0s	☆
P43.10	Delay relay 3 input parameter selection	00.00-98.99(function code index)	0.0s	☆
P43.11	Delay relay 3 input bit selection	0-15	0.0s	☆
P43.12	Delay relay 3 on delay time	0.0s～3000.0s	0.0s	☆

P43.13	Delay relay 3 off delay time	0.0s～3000.0s	0.0s	☆
P43.14	Delay relay 4 input parameter selection	00.00-98.99(function code index)	0.0s	☆
P43.15	Delay relay 4 input bit selection	0-15	0.0s	☆
P43.16	Delay relay 4 on delay time	0.0s～3000.0s	00.00	☆
P43.17	Delay relay 4 off delay time	0.0s～3000.0s	0.0s	☆
P43.18	Delay relay 5 input parameter selection	00.00-98.99(function code index)	00.00	☆
P43.19	Delay relay 5 input bit selection	0-15	0	☆
P43.20	Delay relay 5 on delay time	0.0s～3000.0s	0.0s	☆
P43.21	Delay relay 5 off delay time	0.0s～3000.0s	0.0s	☆
P43.22	Delay relay 6 input parameter selection	00.00-98.99(function code index)	00.00	☆
P43.23	Delay relay 6 input bit selection	0-15	0	☆
P43.24	Delay relay 6 on delay time	0.0s～3000.0s	0.0s	☆
P43.25	Delay relay 6 off delay time	0.0s～3000.0s	0.0s	☆
44 Group Variable selector and logic block				
r44.00	Variable selector 1～4 output	bit0～3 indicate the output of variable selector 1-4	-	●
r44.01	Logic block 1～4 output	bit0～3 indicate the output of logic block 1～4	-	●
P44.02	Variable selector 1 input parameter	00.00～98.99(Function code index)	00.00	☆
P44.03	Variableselector1 threshold	00.00～98.99(Function code index)	00.00	☆
P44.04	Variable selector 1 logic mode	0:>; 1:<; 2:≥;3:≤;4:=; 5:≠; 6:≈	0	☆
P44.05	Variable selector 1 hysteresis width	0～65535	0	☆
KDE300A/VFD500 inbuilt 4 group variable selector,this function can be used for any two function code parameters,by selecting the comparison relationship, and output will be 1 if it meet conditions or it will be 0.Variable selector output can act as DI,VDI,virtual relay input and DO,relay.etc output.Users can easily and flexibily get logic function ,variable selector 1 frame as follows				



P44.06	Variable selector 2 input parameter	00.00-98.99(function code index)	00.00	☆
P44.07	Variable selector 2 threshold	00.00-98.99(function code index)	00.00	☆
P44.08	Variable selector 2 logic mode	0:>; 1:<; 2:≥;3:≤;4:=; 5:≠; 6:≈	0	☆
P44.09	Variable selector 2 hysteresis width	0～65535	0	☆
P44.10	Variable selector 3 input parameter	00.00-98.99(function code index)	00.00	☆
P44.11	Variable selector 3 threshold	00.00-98.99(function code index)	00.00	☆
P44.12	Variable selector 3 logic mode	0:>; 1:<; 2:≥;3:≤;4:=; 5:≠; 6:≈	0	☆
P44.13	Variable selector 3 hysteresis width	0～65535	0	☆
P44.14	Variable selector 4 input parameter	00.00-98.99(function code index)	00.00	☆
P44.15	Variable selector 4 threshold	00.00-98.99(function code index)	00.00	☆
P44.16	Variable selector 4 logic mode	0:>; 1:<; 2:≥;3:≤;4:=; 5:≠; 6:≈	0	☆
P44.17	Variable selector 4 hysteresis width	0～65535	0	☆
P44.18	Logic block 1 threshold parameter 1	00.00-98.99(function code index)	00.00	☆
P44.19	Logic block 1 threshold parameter2	00.00-98.99(function code index)	0	☆

P44.20	Logic block 1 input source	Unit'digit：parameter 1 bit selection 0-F (Represent 0-15),PP44.18 corresponds to 0-15 bit Ten'digit:parameter 2 bit selection 0-F (Represent 0-15),PP44.19 corresponds to 0-15 bit	0	
P44.21	Logic bock 1 function	0:no function;1:and;2:or;3:not and;4:not or;5:Xor 6:Ref=1 effective;Ref2=1 ineffective 7:Ref1 up effective,Ref2 up ineffective 8:Ref1 up and signal reverse 9:Ref1 up and output 200ms pulse width 10:Ref2=0 ineffective always;Ref2=1,Ref1 up effective	0	☆
KDE300A built-in 4 logical units. The logic unit can perform any one of 0-15 bits of any parameter 1 and any one of 0-15 bits of any parameter 2 for logic processing. The condition is true output 1, otherwise 0 is output. Logic unit output can be used as DI, VDI, delay relay and other inputs, DO, relays and other output, the user can more flexible access to the required logic. The schematic block diagram of the logic unit 1 is as follows.  				
P44.22	Logic block 2 threshold parameter 1	00.00-98.99(function code index)	00.00	☆
P44.23	Logic block 2 threshold parameter2	00.00-98.99(function code index)	0	☆
P44.24	Logic block 2 input source	Unit'digit：parameter 1 bit selection 0-F (Represent 0-15),PP44.22 corresponds to 0-15 bit Ten'digit:parameter 2 bit selection 0-F (Represent 0-15),PP44.23 corresponds to 0-15 bit	0	☆
P44.25	Logic bock 2 function	0:no function;1:and;2:or;3:not and;4:not or;5:Xor 6:Ref=1 effective;Ref2=1 ineffective 7:Ref1 up effective,Ref2 up ineffective 8:Ref1 up and signal reverse 9:Ref1 up and output 200ms pulse width 10:Ref2=0 ineffective always;Ref2=1,Ref1 up effective	0	☆
P44.26	Logic block 3	00.00-98.99(function code index)	00.00	☆

	threshold parameter 1			
P44.27	Logic block 3 threshold parameter2	00.00-98.99(function code index)	0	☆
P44.28	Logic block 3 input source	Unit'digit：parameter 1 bit selection 0-F (Represent 0-15),PP44.26 corresponds to 0-15 bit Ten'digit:parameter 2 bit selection 0-F (Represent 0-15),PP44.27 corresponds to 0-15 bit	0	☆
P44.29	Logic bock 3 function	0:no function;1:and;2:or;3:not and;4:not or;5:Xor 6:Ref=1 effective;Ref2=1 ineffective 7:Ref1 up effective,Ref2 up ineffective 8:Ref1 up and signal reverse 9:Ref1 up and output 200ms pulse width 10:Ref2=0 ineffective always;Ref2=1,Ref1 up effective	0	☆
P44.30	Logic block 4 threshold parameter 1	00.00-98.99(function code index)	00.00	☆
P44.31	Logic block 4 threshold parameter2	00.00-98.99(function code index)	0	☆
P44.32	Logic block 4 input source	Unit'digit：parameter 1 bit selection 0-F (Represent 0-15),PP44.30 corresponds to 0-15 bit Ten'digit:parameter 2 bit selection 0-F (Represent 0-15),PP44.31 corresponds to 0-15 bit	0	☆
P44.33	Logic bock 4 function	0:no function;1:and;2:or;3:not and;4:not or;5:Xor 6:Ref=1 effective;Ref2=1 ineffective 7:Ref1 up effective,Ref2 up ineffective 8:Ref1 up and signal reverse 9:Ref1 up and output 200ms pulse width 10:Ref2=0 ineffective always;Ref2=1,Ref1 up effective	0	☆
P44.34	Constant setting 1	0～65535	0	☆
P44.35	Constant setting 2	0～65535	0	☆
P44.36	Constant setting 3	0～65535	0	☆
P44.37	Constant setting 4	-9999～9999	0	☆
P44.38	Constant setting 1 as per bit definition	0～65535(define as bit)	0	☆
P44.39	Constant setting 2 as per bit definition	0～65535(define as bit)	0	☆

P44.40	Constant setting 3 as per bit definition	0～65535(define as bit)	0	☆
P44.41	Constant setting 4 as per bit definition	0～65535(define as bit)	0	☆
Constant setting for reference of variable selector or logic block input				
45 Group Multi-functional counter				
r45.00	Counter 1(32bit) actual value (before Electronic gear)	Read only （32 bit）save when power off	-	●
r45.02	Counter 1(32bit) actual value (after Electronic gear)	Read only （32 bit）save when power off	-	●
P45.04	Counter 1 (32bit) set value (after Electronic gear)	1～4294967295（32 bit）	1000	☆
P45.06	Counter 1(32bit) max value (after Electronic gear)	1～4294967295（32 bit）	4294967295	☆
P45.08	Counter 1 Electronic gear numerator	1～65535	1	☆
P45.09	Counter 1 Electronic gear denominator	1～65535	1	☆

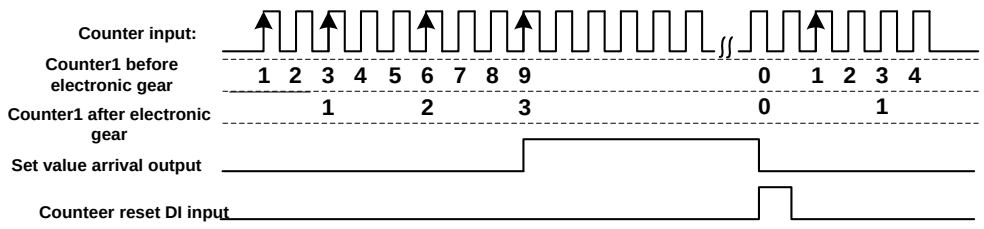
KDE300A/VFD500 has two inbuilt counters:counter 1 is for 32 bit multifunctional counter with electronic gear;Counter 2 is a common counter with 16 bit without electronic gear.following is counter 1 function and use.

Counter 1 get input pulse signal via DI function 50 (counter 1 Input),when counter 1 comes to setting value (P45.04) via electronic gear,it can come to signal via DO function (21) and counter will continue to count

When counter arrive maximum value,it will decide to overflow as per P45.13

Set Di(51) terminal to Count1 reset ,when terminal effective,counter 1 will reset

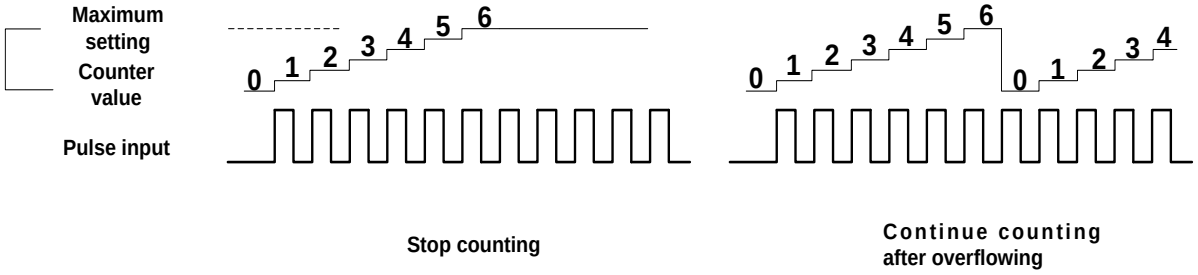
For example: P45.04＝3, P45.08＝3, P45.09＝1,Count 1 functoin as following picture



r45.10	Counter 2(16 bit) actual value	Read only and save when power off	-	●
P45.11	Counter 2 (16 bit) set value	1～65535	1000	☆

P45.12	Counter2 (16 bit) maximum value	1～65535	65535	☆
P45.13	Counter 1/2 overflow action 0-stop;1-reset	00～11 Unit'digit：Count 1 overflow action 0: stop; 1:continue Ten'digit：Count 1 overflow action 0: stop ; 1:continue	11	☆

Count 1/2 overflow action:when counter higher than maximum value as following chart



60 Group Motor 2 basic parameter

P60.00	Control mode	Same as P00.04	0	★
P60.01	Upper limit frequency	Same as P01.07	0	★
P60.02	Upper limit frequency digital setting	Lower limit (P01.09)～ maximum frequency(P01.06)	50.00Hz	☆
P60.04	Accel and Decel time option	0：same as motor 1 1：Accel and Decel time 3 When choose 1,Motor 2 can convert betweens accel and decal time 3 and 4 by DI terminal function code 55 or switch by output frequency comparing with P60.05 P60.06）	0	★
P60.05	Accel time frequency switchover 2	0.00Hz～maximum frequency (P01.06)	0.00Hz	☆
P60.06	Decel time frequency switchover 2	0.00Hz～maxinumm frequency(P01.06)	0.00Hz	☆

61 Group Motor2 parameter

61.xx same as motor 1 parameter P11.xx

62 Group Motor 2 VF control parameter

62.xx same as motor 1 VF control P12.xx

63 Group Motor 2 Vector control parameter

63.xx same as motor 2 Vector control P13.xx

Chapter 6 Fault Diagnosis and Solution

KDE300A inverter has 24 types of warning information and protection function. In case of abnormal fault,

the protection function will be invoked, the inverter will stop output, and the faulty relay contact of the inverter will start, and the fault code will be displayed on the display panel of the inverter. Before consulting the service department, the user can perform self-check according to the prompts of this chapter, analyze the fault cause and find out t solution. If the fault is caused by the reasons as described in the dotted frame, please consult the agents of inverter or our company directly

Fault Name	Display	Possible Causes	Solutions
Inverter unit protection	Er. SC	1: The output circuit is grounded or short circuited. 2: The connecting cable of the motor is too long. 3: The IGBT overheat. 4: The internal connections become loose. 5: The main control board is faulty. 6: The drive board is faulty. 7: The inverter IGBT is fault	1: Eliminate external faults. 2: Install a reactor or anoutput filter. 3: Check the air filter and the cooling fan. 4: Connect all cables properly. 5: Ask for technical support 6: Ask for technical support 7: Ask for technical support
Ground short circuit	Er.SC1	1. Short circuit of motor to ground 2, the motor and inverter wiring is too long 3, module overheating 4. The internal wiring of the inverter is loose 5. Control board is fault 6, Drive board is fault 7, inverter module is fault	1. Replace cable or motor 2. Install reactor or output filter 3. Check whether the air duct is blocked, the fan is working properly and eliminate the existing problems 4. Plug in all the connections 5. Ask for technical support 6. Ask for technical support 7. Ask for technical support
Over current during acceleration	Er.OC1	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The acceleration time is too short. 4: Manual torque boost or V/F curve is not appropriate. 5: The voltage is too low. 6: The startup operation is performed on the rotating motor. 7: A sudden load is added during acceleration. 8: The frequency inverter model is of too small power class.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time. 4: Adjust the manual torque boost or V/F curve. 5: Adjust the voltage to normal range. 6: Select rotational speed tracking restart or start the motor after it stops. 7: Remove the added load. 8: Select a frequency inverter ofhigher power class.

Fault Name	Display	Possible Causes	Solutions
Over current during deceleration	Er.OC2	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The deceleration time is too short. 4: The voltage is too low. 5: A sudden load is added during deceleration. 6: The braking unit and braking resistor are not installed	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the deceleration time. 4: Adjust the voltage to normal range. 5: Remove the added load. 6: Install the braking unit andbraking resistor.
Over current at constant speed	Er.OC3	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The voltage is too low. 4: A sudden load is added during operation. 5: The frequency inverter model is of too small power class.	1:Eliminate external faults. 2: Perform themotor auto-tuning. 3:Adjust Thevoltagetonormalrange. 4: Remove the addedload. 5: Select afrequency Inverterofhigher powerclass.
Overvoltage during acceleration	Er.OU1	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: The acceleration time is too short. 4: The braking unit and braking resistor are not installed.	1:Adjust The voltage to normal range. 2: Cancel theexternal forceor install a braking resistor. 3: Increase the acceleration time. 4: Install thebraking unit And braking resistor.
Overvoltage during deceleration	Er.OU2	1: The input voltage is too high. 2: An external force drives the motor during deceleration. 3: The deceleration time is too short. 4: The braking unit and braking resistor are not installed.	1:Adjust The voltage to normal Range. 2: Cancel theexternal forceor install thebraking resistor. 3: Increasethe decelerationtime. 4: Install thebraking unit andbraking resistor
Overvoltage at constant speed	Er.OU3	1: The input voltage is too high. 2: An external force drives the motor during deceleration.	1:Adjust The voltage to normal range. 2: Cancel theexternal forceor install thebraking resistor.
Low voltage	Er.LU1	1: Instantaneous power failure occurs on the input power supply. 2: The frequency inverter's input voltage is not within the allowable range. 3: The DC bus voltage is abnormal. 4: The rectifier bridge and buffer resistor are faulty. 5: The drive board is faulty. 6: The main control board is faulty.	1: Reset thefault. 2:Adjust Thevoltagetonormalrange. 3: Ask for technical support 4: Ask for technical support 5: Ask for technical support 6: Ask for technical support

Fault Name	Display	Possible Causes	Solutions
Contactor open	Er.LU2	1. Instantaneous power cut 2, the inverter input voltage is not in the scope of the specification requirements 3. Abnormal bus voltage 4,rectifier bridge and buffer resistance is not normal 5, drive board is fault 6. control board is fault	1. Reset failure 2. Adjust the voltage to the normal range 3. Ask for technical support 4. Ask for technical support 5. Ask for technical support 6.Ask for technical support
Frequency inverter overload	Er. oL	1: The load is too heavy or locked-rotor occurs on the motor. 2: The frequency inverter model is of too small power class.	1: Reduce the load andcheck the motor and mechanical condition. 2: Select afrequency Inverter of higher power level.
Motor overload	Er.oL1	1: F8-02 is set improperly. 2: The load is too heavy or locked-rotor occurs on the motor. 3: The frequency inverter model is of too small power class.	1: Set F8-02 correctly. 2: Reduce the load andcheck the Motor and the mechanical condition. 3: Select a frequency Inverter of higher power level
Motor overheat	Er. oH3	1: The cabling of the temperature sensor becomes loose. 2: The motor temperature is too high	1: Check the temperature sensor cabling and eliminate the cabling fault. 2: Lower the carrier frequency or adopt other heat radiation
Power input phase loss	Er.iPL	1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: Thelightning proof board is faulty. 4: The main control board is faulty.	1:Eliminate external faults. 2: Ask for technical support. 3: Ask for technical support. 4: Ask for technical support.
Power output phase loss	Er.oPL	1: The cable connecting the frequency inverter and the motor is faulty. 2: The frequency inverter's three-phase outputs are unbalanced when the motor is running. 3: The drive board is faulty. 4: The IGBT module is faulty.	1:Eliminate external faults. 2: Check whether the Motor three phase winding is normal. 3: Ask for technical support. 4: Ask for technical support.
IGBT Module overheat	Er. oH	1: The ambient temperature is too high. 2: The air filter is blocked. 3: The fan is damaged. 4: The thermally sensitive resistor of the IGBT module is damaged. 5: The inverter IGBT module is damaged	1:Lower the ambient temperature. 2: Clean theairfilter. 3: Replace thedamaged fan. 4: Replace the damaged thermally sensitive resistor. 5: Replace the inverter module.

Fault Name	Display	Possible Causes	Solutions
module temperature detection fault	Er.tCK	1, temperature detection line broken 2, drive board is faulty 3. Main control board is faulty 4, the environmental temperature is too low	1. Check the thermistor wiring 2. Ask for technical support 3. Ask for technical support 4, manual intervention to drive the temperature rise
485Communication fault	Er.485	1, the work of the host computer is not normal 2, the communication line is not normal 3, the communication parameter set is incorrect	1. Check the connection of upper computer 2. Check the communication connection line 3. Set communication parameters correctly
Current detection fault	Er.CUr	1: The HALL device is faulty. 2: The drive board is faulty. 3: The control board is faulty	1: Replace the faulty HALL device. 2: Replace the faulty drive board. 3: Ask for technical support.
Motor auto-tuning fault 1	Er.TU1	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parametersaccording to the nameplateproperly. 2: Check the cable connectingthe
Motor auto-tuning fault2	Er.TU2	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parametersaccording to the nameplateproperly. 2: Check the cable connectingthe Frequency inverter and themotor.
EEPROM read- write fault	Er.EEP	1、 Eeprom Operate too frequent 2、 The EEPROM chip is damaged.	1、 Operate Eeprom suitable 2、 Replace the main control board
Off load	Er. LL	1、The frequency inverter running current is lower than the setting value.	1、Confirm whether the load is off 2、Check that the load is disconnected or the parameter setting is correct
PID feedback lost during running	Er.FbL	1、 PID feedback<P40.35 setting value and P40.36 not zero,PID feedback>P40.37 setting value and P40.38 not zero	1、 check PID feedback signal 2、 P40.35 and P40.37 set correct parameter
User-defined fault 1	Er.Ud1	1: The signal of user-defined fault 1 is input via DI. 2:The signal of user-defined fault 1 is input via virtual I/O.	1: Reset the operation. 2: Reset the operation
User-defined fault 2	Er.Ud2	1: The signal of user-defined fault 2 is input via DI. 2:The signal of user-defined fault 2 is input via virtual I/O.	1: Reset the operation. 2: Reset the operation

Fault Name	Display	Possible Causes	Solutions
By wave current limitingfault	Er.CbC	1: The load is too heavy or locked-rotor occurs on the motor. 2: The frequency inverter model is of too small power class	1: Reduce the load and check the motor and mechanical condition. 2: Select a frequency inverter of higher power class.
Too large speed deviation	Er.DEV	1: The encoder parameters are setincorrectly. 2: The motor auto-tuning is notperformed. 3: The detection parameters of toolarge speed deviation are setincorrectly.	1: Set the encoder parameters properly. 2: Perform the motor auto-tuning. 3: Set the detection parameters correctly based on the actualsituation.
Motor over-speed	Er. oS	1: The encoder parameters are setincorrectly. 2: The motor auto-tuning is notperformed. 3: The over-speed detectionparameters are set	1: Set the encoder parametersproperly. 2: Perform the motor auto-tuning. 3: Set the over-speed detection parameter correctly based on the actual situation.
Encoder offline	Er.PGL	1. motor locked 2. encoder pulse setting wrong 3. encoder offline	1 check motor and mechanical condition 2 set correct parameter for encoder 3 check encoder connecting line

Chapter 7 Selection Guide of braking component

7.1 Selection Guide of braking component

The braking resistor is used to consume the energy fed back by the motor to the inverter during braking or generating operation, so as to achieve quick braking or prevent the inverter from reporting the main circuit overvoltage fault. Braking resistor selection has two parameters: resistance and power, under normal circumstances, the greater the system inertia, the need for deceleration time is shorter, the more frequent braking, the braking resistor selection should be greater power , The smaller the resistance.

1、Selection of braking units

When braking, almost all the renewable energy of motor is consumed on the braking resistor.

$$R = \frac{U^2}{P_B}$$

Formula：

U --- The braking voltage when the system brakes stably (different system is different, for the 380VAC system generally take 700V)

R - Braking resistor

Pb – Braking Power

2 、**Selection power of braking resistor**

Braking resistor power can be calculated according to the following formula：

$$P_R = P_B \times D$$

Formula，

P_R----Braking resistor power

D ---- Braking frequency (braking process accounts for the proportion of the entire process), by the load conditions to determine the characteristics of common occasions typical values are shown in the table below：

Table 7-1 Braking frequency of common applications

applications	D value
elevator	10%～20%
Unwinding and winding	40%～50%
Centrifuge	40%～60%
Occasional brake load	5%
General application	10%

3 、braking components selection table

Table 7-2 KDE300A braking components selection table

Three phase 380V			
Model	Recommend power of braking resistor （10%braking	Recommend resistance value of braking resistor	Braking unit
KDE300A-R75GT4	100W	≥ 300Ω	Built-in as standard
KDE300A-1R5GT4	150W	≥ 220Ω	
KDE300A-2R2GT4	300W	≥ 180Ω	
KDE300A-3R7G/5R5PT4	500W	≥ 130Ω	

KDE300A-5R5G/7R5PT4	800W	≥ 90Ω	Built-in as option
KDE300A-7R5G/011PT4	1000W	≥ 68Ω	
KDE300A-011G/015PT4	1.2KW	≥ 45Ω	
KDE300A-015G/018PT4	1.5KW	≥ 32Ω	
KDE300A-018G/022PT4	2.0KW	≥ 25Ω	
KDE300A-022G/030PT4	2.5KW	≥ 22Ω	
KDE300A-030G/037PT4	3.0KW	≥ 15Ω	
KDE300A-037G/045PT4	3.7 KW	≥ 15Ω	
KDE300A-045G/055PT4	4.5 KW	≥ 10Ω	
KDE300A-055G/075PT4	5.5 KW	≥ 8Ω	
KDE300A-075G/090PT4	7.5 KW	≥ 8Ω	
KDE300A-090G/132PT4～ KDE300A-560G/630PT4	As per actual load and braking power		external

Chapter 8 Daily maintenance of frequency inverters

8.1 Daily maintenance

Due to the influence of temperature, humidity, dust and vibration, it will lead to poor heat dissipation and component aging of frequency inverter, and results in potential failure or reducing the service life of frequency inverter. Therefore, it is necessary to do daily and regular maintenance of the frequency inverter.

8.1.1 Daily maintenance

Due to the influence of temperature, humidity, dust and vibration, it will lead to poor heat dissipation and component aging of frequency inverter, and results in potential failure or reducing the service life of frequency inverter. Therefore, it is necessary to do daily and regular maintenance of the frequency inverter.

Daily check items:

1) Check if the sound is normal during the running of the motor;
2) Check if there is a vibration during the running of the motor;
3) check whether the installation environment of frequency inverter has changed;
4) Check if the cooling fan of frequency inverter is working correctly, the cooling air duct is clear;
5) Check if the frequency inverter is overheating;
6) Make sure that the frequency inverter should always be kept in a clean state;
7) Clear up effectively the dust on the surface of frequency inverter, prevent the dust from entering into the inside of frequency inverter, especially for the metal dust;
8) Clear up effectively the oil and dust on the cooling fan of frequency inverter.

8.1.2 Regular inspection

Please regularly check the frequency inverter, especially for the difficult checking place of running.

Regular inspection items:

1) Check the air duct and clear up regularly;
2) Check if there are any loose screws;
3) Check if the inverter has been corroded;
4) Check whether the wiring terminals show signs of arcing;
5) Main circuit insulation test.

Note: When using the megger(please use the DC 500V meg ohm meter) to measure the insulation resistance, you shall disconnect the main circuit with the frequency inverter. Do not use the insulation resistance meter to test the control circuit. It don’t have to do the high voltage test (It has been done when the frequency inverter produced in factory.)

8.2 Wearing parts replacement

The wearing parts of frequency inverter include the cooling fan and filter electrolytic capacitor, its service life is closely related to the using environment and maintenance status. The general service life is shown as follows:

Part Name	Service Life

Fan	2 ~ 3 Years
Electrolytic capacitor	4 ~ 5 Years

The user can confirm the replace time according to the running time.

1) Possible reasons for the damage of cooling fan: bearing wear and vane aging. Distinguish standard: Any cracks in the fan vanes, any abnormal vibration sound during the starting of frequency inverter.

2) Possible reasons for the damage of filter electrolytic capacitor: poor quality of the input power supply, the environment temperature is high, the load change frequently and the electrolyte aging. Distinguish standard: Any leakage of its liquid, if the safety valve is protruding, electrostatic capacitance and insulation resistance measurement.

8.3Warranty Items

1) Warranty only refers to frequency inverter.

2) Under normal use, if there is any failure or damage, our company is responsible for the warranty within 18 months. (Leave factory date is subjected to the S/N on the frequency inverter nameplate or according to the contract). When over 18 months, reasonable fee will be charged for maintenance;

3) During the period of 18 months, if the following situation happens, certain maintenance fee will be charged;

a. The users don't follow the rules in the manual lead to the frequency inverter damaged;

b. The damage caused by fire, flood and abnormal voltage;

c. The damage caused by using the frequency inverter for abnormal functions;

d. The relevant service fee is calculated according to the manufacturer's standard, if there is an contract, then it is subject to the contract items.

Appendix A Modbus communication protocol

KDE300A series of inverter provides RS485 communication interface, and adopts MODBUS communication protocol. User can carry out centralized monitoring through PC/PLC to get operating requirements and user can set the running command, modify or read the function codes, the working state or fault information of frequency inverter by Modbus communication protocol. In addition VFD 300A can also be used as a host to broadcast with other KDE300A communication.

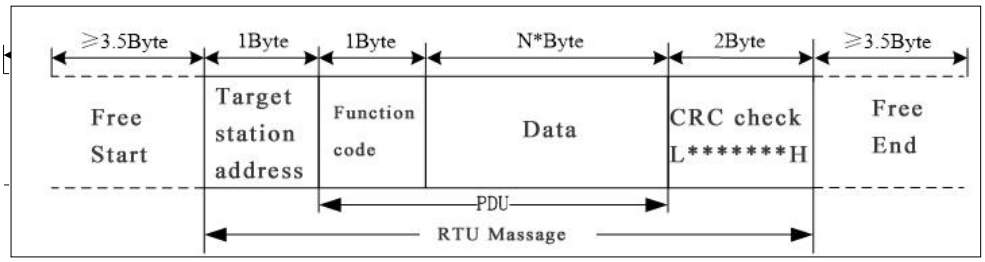
A.1 Protocl fomat

RS485 asynchronous half-duplex.

RS485 terminal default data format: 1-8-N-1 (1 start bit, 8 data bits, no parity, 1 stop bit), the default baud rate: 9600bps. See parameter group set 30.

A.2 Message format

The KDE300A series inverter Modbus message includes the start sign, the RTU message, and the end sign。



The RTU message includes the address code, the PDU (Protocol Data Uint, the protocol data unit), and the CRC check. PDU includes the function code and the data section.

RTU frame format：

Frame start (START)	More than the 3.5 byte transmission time	
Target station address (ADR)	Communication address:1 to 247(0: broadcast address)	
Command code (CMD)	Command code	Description
	0x03	Read multiple registers of the AC drive
	0x06	Write a single register to the AC drive.
	0x10	Write Multiple registers to the AC drive.
	0x08	Diagnostic command code
Number of function code	Including the register address (2Byte), the number of registers n(2Byte) and the register content (2nByte), etc.see A3 in detail	
CRC CHK low level	It indicates the replying data or the data waiting to write-in. CRC 16 check value,During the transmission, high bit is put in front and low bit is at the back.see detail in A.5 Chapter	
CRC CHK high level		
FRAME END	More than 3.5 byte transmission time	

A.3 Command code instruction

A.3.1 Command code 0x03 Read multiple registers or status words

- **Request PDU**

Command code	1byte	0x03
initial address	2byte	0x0000～0xFFFF(high 8 bit in front)
Number of registers	2byte	0x0001-0x0010 (1～16,high 8 bit in front)

- **Response PDU**

Command code	1byte	0x03
Initial address	1byte	2n（n means Number of registers）
Number of registers	2* n byte	Register value high 8 bit in front,first send initial address'register value

- **Wrong PDU**

Command code	1byte	0x83
Abnormal code	1byte	See A.4 Abnormal response information

Currently Modbus protocol 0x03 command code does not support cross-group read multiple function codes, it will be wrong if more than the current group of function code number

A.3.2 Command code 0x06 write single registers or status word command codes

Request PDU

Command code	1byte	0x06
Initial address	2byte	0x0000～0xFFFF(high 8 bit in front)
Register value	2byte	0x0000～0xFFFF(register value high 8 bit in front)

- **Respond PDU**

Command code	1byte	0x06
Register address	2byte	0x0000～0xFFFF
Register value	2byte	0x0000～0xFFFF

- **Wrong PDU**

Command code	1byte	0x86
Abnormal code	1byte	See A4 Abnormal response information

A.3.3 Command 0x10 write multiple registers or status word command codes

- **Request PDU**

Command code	1byte	0x10
Initial address	2byte	0x0000～0xFFFF(high 8 bit in front)
Number of Register	2byte	0x0001～0x0010(1～16, high 8 bit in front)
Number of Byte	1byte	2n (n is number of Register)

Register Value	2* n byte	Register value high 8 bit in front,first send initial address'register value

- **Respond PDU**

Command code	1byte	0x10
Initial address	2byte	0x0000～0xFFFF(high 8 bit in front)
Number of register	2byte	1～16(1～16, high 8 bit in front)

- **Wrong PDU**

Command code	1byte	0x90
Abnomal Code	1byte	See Abnormal response information

A.3.4 Commad code 0x08 Diagnostic function

- Modbus Command Code 0x08 Provide a series of tests to check the communication system between the client (master) device and the server (slave) or various internal error conditions in the server.
- This function uses the sub-command code of 2 bytes inquery to define the type of test to be performed. The server copies the command and subcommand codes in the normal response. Some diagnostics cause the remote device to return the data through the normally responding data fields.
- Diagnostic functions to remote devices generally do not affect the user program running in the device. The main diagnostic function of this product is not line diagnosis (0000), used to test the host from the machine is normal communication.
- Request PDU

Command code	1byte	0x08
Subcommand code	2byte	0x0000～0xFFFF
Data	2byte	0x0000～0xFFFF

Respond PDU

Command code	1byte	0x08
Subcommand code	2byte	0x0000
Data	2byte	Same as request of PDU

Wrong PDU

Command code	1byte	0x88
Abnomal code	1byte	See Abnormal response information

A.4 Abnormal response information

When the master device sends a request to the slave device, the master expects a normal response. The master's query may result in one of four events:

(1) If the slave device receives a request for a communication error and the query can be processed normally, the slave device will return a normal response.

(2) If the slave device does not receive the request due to a communication error, no information can be returned and the slave device times out.

(3) If the slave device receives a request and detects a communication error (parity, address, framing error, etc.), no response is returned and the slave device times out.

(4) If the slave device receives no communication error request, but can not handle the request (such as the register address does not exist, etc.), the slave station will return an abnormal response to inform the master of the actual situation.

Abnormal response command code = normal response command code + 0x80, Abnormal code value and meaning as shown in the following table

Error code	Name	Description
0x01	Invalid command code/error function code	The function code received by the slave is outside the configured range
0x02	Error data address/ Illegal register address	Slave station receives the data address is not allowed address the number of registers being Read and write is out of range When writing multiple registers, the number of bytes in the PDU is not equal to the number of registers
0x03	wrong frame format	Length of frame is not correct CRC verifying not passed
0x04	Data is out of range	The data received by the slave exceeds the corresponding register minimum to maximum range
0x05	Reading request refuse	Operate to read-only register wirte Operate to read-only register write in running status

A.5 CRC check

CRC（Cyclical Redundancy Check）use RTU frame，The message includes an error detection field based on the CRC method. The CRC field examines the contents of the entire message. The CRC field is two bytes containing a binary value of 16 bits. It is calculated by the transmission equipment and added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field,If the two CRC values are not equal, there is an error in the transmission. There is a lot of information on the Internet about CRC checking it is not elaborated here about CRC check code generation algorithm,

A.6 Register address distribution

The register address of KDE300A is 16-bit data, the upper 8 bits represent the function code group number, the lower 8 bits represent the group number, the upper 8 bits are sent before. The 32-bit register occupies two adjacent addresses, the even address stores the lower 16 bits, and the next address (odd address) of the even address stores the upper 16 bits.

In the register write operation, in order to avoid frequent damage caused by memory EEPROM write, using the highest bit of the register address indicates whether it save as EEPROM, the highest bit to be 1 indicates to save in EEPROM, 0 means save only in RAM. In other words, if you want to write the register value which is saved after power-off, you should add 0x8000 to the original register address.

KDE300A register address as follows：

Adress space		Descriptoin
0x0000 ~ 0x6363		High 8 bit means group number (0-99), low 8 bit means within group serial number (0-99),illustrated by hexadecimal for Example: Function code 40.10 with address 0x280A (0x28 = 40, 0x0A = 10).
Communicatoin special address	0x7000	Communication command.The values and functions are as follows：

		0x0000：disable command ； 0x0001：forward running； 0x0002：reverse running； 0x0003：forward jog； 0x0004：reverse jog； 0x0005：free stop； 0x0006：decelerating stop； 0x0007：immediate stop； 0x0008：fault reset；
	0x7001	Communication speed given. The unit of this register can be set by P30.14。 0.01%（-100.00% ~ 100.00%） 0.01Hz（0 ~ 600.00Hz） 1Rpm（0 ~ 65535Rpm）
	0x7002	CommunicationTorque given.0.01%（-300.00% ~ 300.00%）
	0x7003	Communication upper frequency given. The unit of this register can be set by P30.14. Different units range same as 0x7001.
	0x7004	Torque mode speed limit. The unit of this register can be set by P30.14. Different units range same as 0x7001.
	0x7005	Electric torque limit 0.1%（0~300.0%）
	0x7006	Power generation torque limit 0.1%（0~300.0%）
	0x7007	PID setting source.0.01%（-100.00% ~ 100.00%）
	0x7008	PID feedback source 0.01%（-100.00% ~ 100.00%）
	0x7009	VF separation voltage given.0.1%（0~ 100.0%）
	0x700A	External fault setting

A.7 The inverter acts as a Modbus master

KDE300A can be used as a Modbus master station, it currently only supports broadcast network. When P30.09 is set as 1, master mode can be enabled. The sending frame as master station is as follows:

0x00	0x06	0x70	N	ValH	ValL	CRCL	CRCH

Instruction：

1. N indicates the slave register of the operation which is set by P30.10.
2. Val means the data sent, Val = (ValH << 8) + ValL, the function code P30.11 is to select the contents of the data sent.
3. The idle time between frame and frame is set by function code P30.12.


KDE