Preface

Thank you for choosing the AV18 series VFD!

As one of the most advanced high-torque vector VFD(variable-frequency drive), the motor control performance of AV18 series VFD is obviously improved; it's not only available to realize the control of asynchronous motor and permanent magnet synchronous motor (PMSM), but also support a variety of PG cards, thus the function is more formidable.

It can be used in various industries such as textile, paper-making, packaging and food, as well as lots of electric drive equipment, covering the machine tool, lifting and hoisting machinery, petroleum machinery, chemical machinery, fan, pump, etc.

This Operating Instruction describes the methods to correctly use this AV18 series VFD. In order to guarantee your safety and effectively complete your work, please read this Operating Instruction carefully before use (installation, operation, maintenance, inspection, etc.). In addition, please use the product after you have completely understood the safety precautions of the product.

Precautions
◆ When using this product, be sure to install the shell or cover as required, and carry out the operation according to the contents stipulated in this Operating Instruction. All illustrations presented in this Operating Instruction are for reference only; in case any illustration is inconsistent with the real object, the real object shall prevail. ◆ In this Operating Instruction, the specifications and versions will be changed with the product improvement, we reserve the right to make alterations without notice. In addition, the Company reserves all the right for the final explanation. ◆ If you need to order the Operating Instruction due to damage or loss, please feel free to contact the regional agents of the Company, or directly contact the Customer Service Center of the Company.

2.3 Product specifications

Model & Specifications of AV18 Series High Performance Vector VFD

Three-phase 380V

VFD model	Power capacity	Input curren (A)	Output current (A)	Adapted motor (KW)
AV18-00R7G3/01R5P3	1.5	3.4	2.1	0.75/1.5
AV18-01R5G3/02R2P3	3.0	5.0	3.8	1.5/2.2
AV18-02R2G3/04R0P3	4.0	5.8	5.1	2.2/4.0
AV18-04R0G3/05R5P3	5.9	10.5	9/13	4.0/5.5
AV18-05R5G3/07R5P3	8.9	14.6	13/17	5.5/7.5
AV18-07R5G3/0011P3	11.0	20.5	17/25	7.5/11
AV18-0011G3/0015P3	17.0	26.0	25/32	11/15
AV18-0015G3/0018P3	21.0	35.0	32/37	15/18.5
AV18-0018G3/0022P3	24.0	38.5	37/45	18.5/22
AV18-0022G3/0030P3	30.0	46.5	45/60	22/30
AV18-0030G3/0037P3	40.0	62.0	60/75	30/37
AV18-0037G3/0045P3	57.0	76.0	75/91	37/45
AV18-0045G3/0055P3	69.0	92.0	91/112	45/55
AV18-0055G3/0075P3	85.0	113.0	112/150	55/75
AV18-0075G3/0090P3	114.0	157.0	150/176	75/90
AV18-0090G3/0110P3	134.0	180.0	176/210	90/110
AV18-0110G3/0132P3	160.0	214.0	210/253	110/132
AV18-0132G3/0160P3	192.0	265.0	253/304	132/160
AV18-0160G3/0185P3	231.0	307.0	304/340	160/185
AV18-0185G3/0200P3	242.0	350.0	340/377	185/200
AV18-0200G3/0220P3	250.0	385.0	377/426	200/220
AV18-0220G3/0250P3	280.0	430.0	426/465	220/250
AV18-0250G3/0280P3	355.0	468.0	465/520	250/280
AV18-0280G3/0315P3	396.0	525.0	520/585	280/315
AV18-0315G3/0350P3	445.0	590.0	585/650	315/350
AV18-0350G3/0400P3	500.0	665.0	650/725	350/400
AV18-0400G3/0450P3	565.0	785.0	725/820	400/450

2.5 Product appearance & position and size of installation hole

2.5 Product appearance & position and size of installation hole of the AV18 Series high performance vector VFD

1. G0.75 ~ G18.5KW Wall-mounted Plastic Structure Outline and Dimension Schematic Diagram

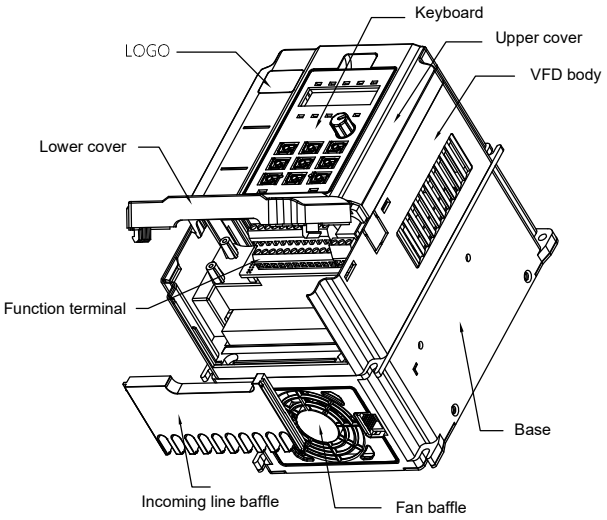


Figure AV18 Series High Performance Vector VFD G0.75 ~ G18.5KW Plastic Structure Schematic Diagram

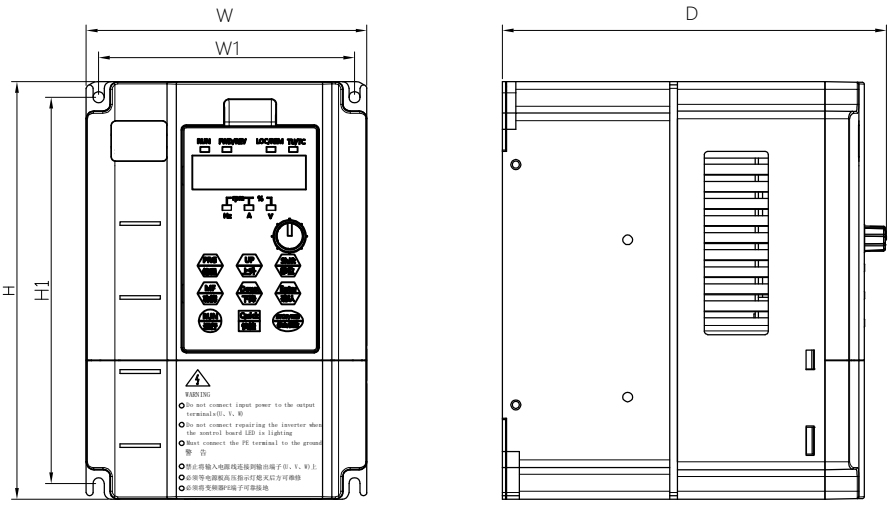


Figure AV18 Series High Performance Vector VFD G0.75 ~ G18.5KW Plastic Structure Outline Installation Schematic Diagram

2. Outline and Dimension Schematic Diagram of AV18-22ÿ400KW Wall-mounted Metal Shell VFD

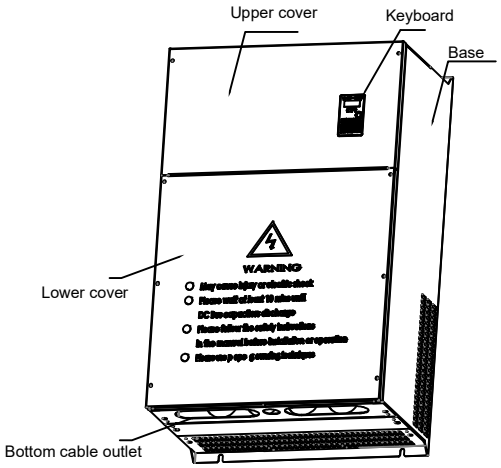


Figure AV18 Series High Performance Vector VFD G22 ~ G400KW
Sheet-metal Structure Schematic Diagram

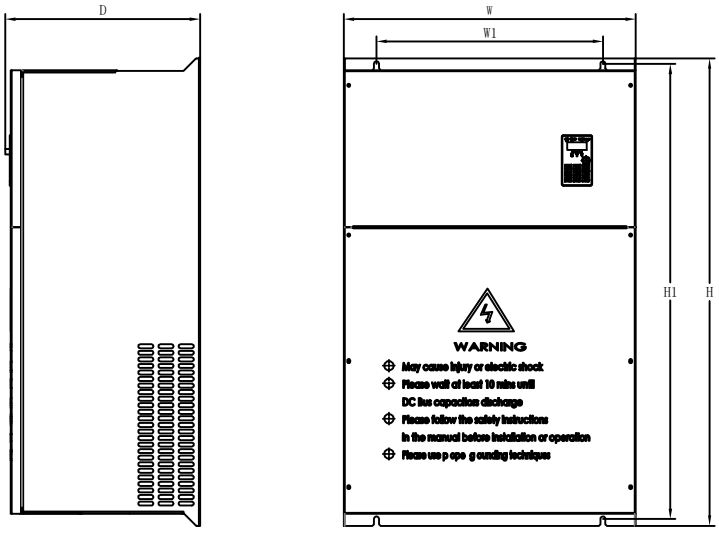


Figure AV18 Series High Performance Vector VFD G22 ~ G400KW
Sheet-metal Structure Outline Installation Schematic Diagram

Table Appearance & Position and Size of Installation Hole of the AV18 Series High Performance Vector VFD

VFD	H2	H2	H1	H1	D1	Installatio	Remarks
0.75KW-2.2KW	172	114	185.6	125	171.1	5	
4KW-7.5KW	237	149	248	160	191.5	6	
11KW-18.5	304	190	322	208	201.9	6	
22KW-37KW	448	234	446	284	228	6.5	
45KW-55KW	580	260	604	385	269	10.5	
75KW-90KW	680	349	702	475	316	10.5	
110KW-185KW	902.5	449	928.5	579	386	10.5	Without base
200KW-280KW	1030	420	1060	650	386	12	Without base
315KW-400KW	1300	520	1359	800	403	16	Without base

2.5.3 Overall dimension of keyboard and keyboard bracket

1 . Overall dimension of keyboard

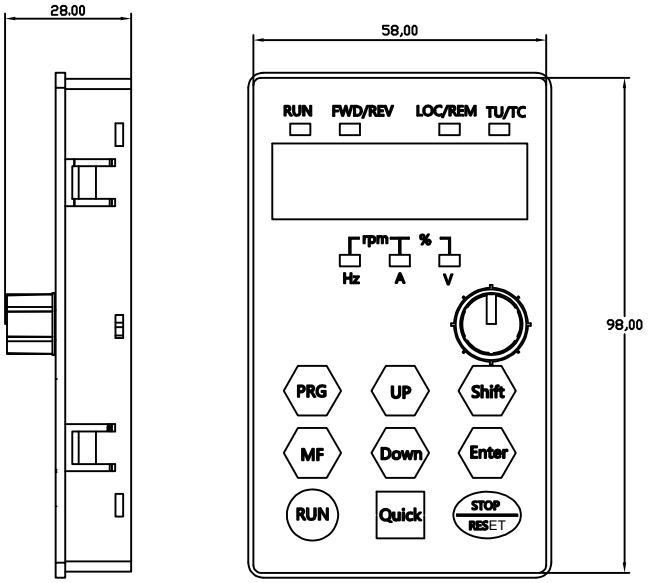
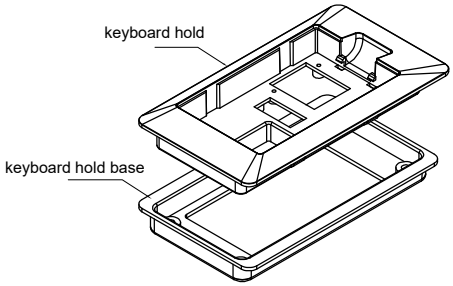


Figure Overall dimension of outer lead keyboard (unit: mm)

2. Overall dimension of keyboard bracket



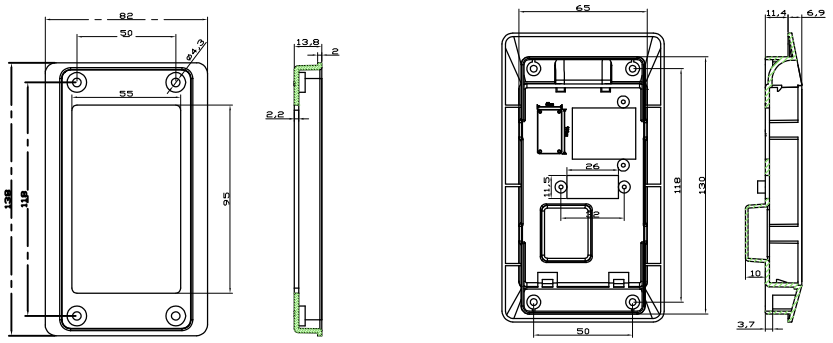


Figure Overall dimension of outer lead keyboard bracket (unit: mm)

3.2.2 Wiring Method

1 . Control board drawing of AV18 series VFD

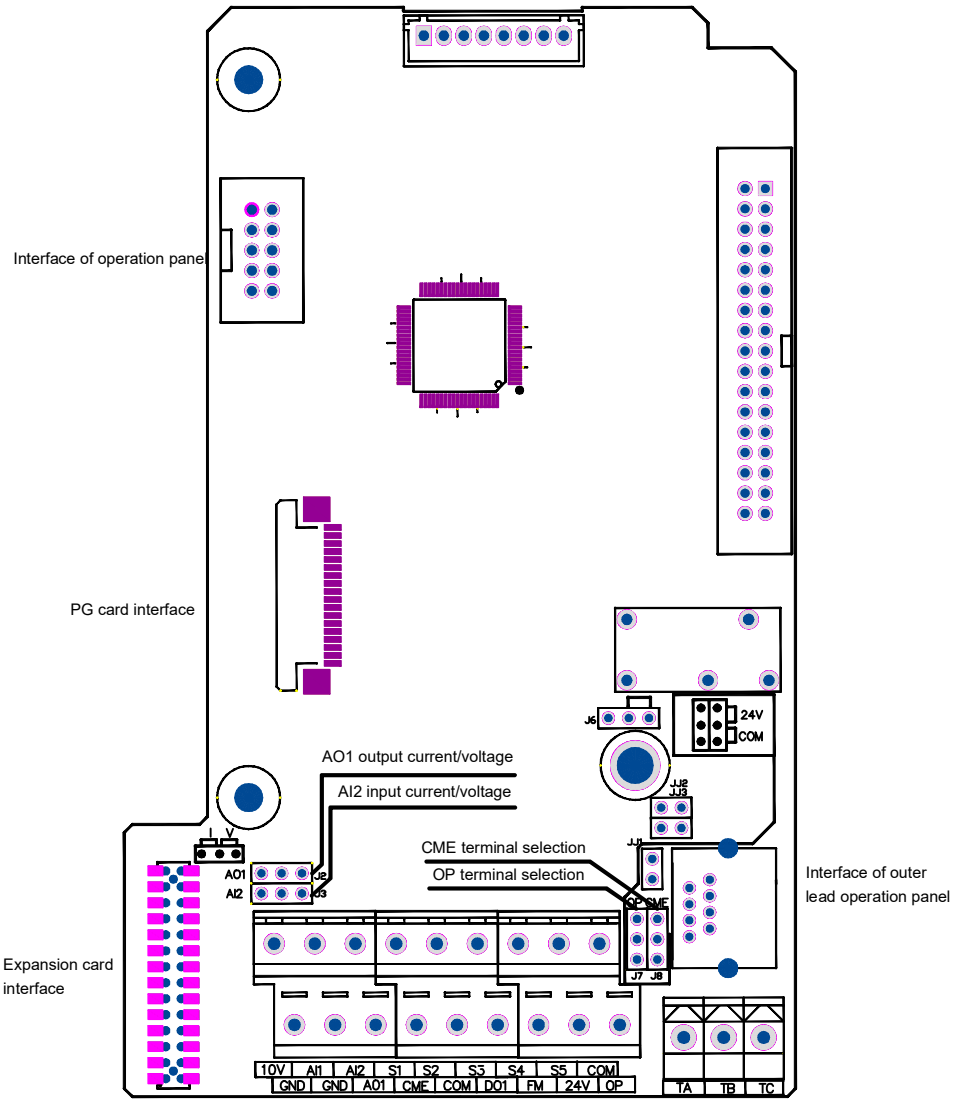


Figure 3-2 Control board drawing of AV18 series VFD

2 . VFD Wiring Diagram

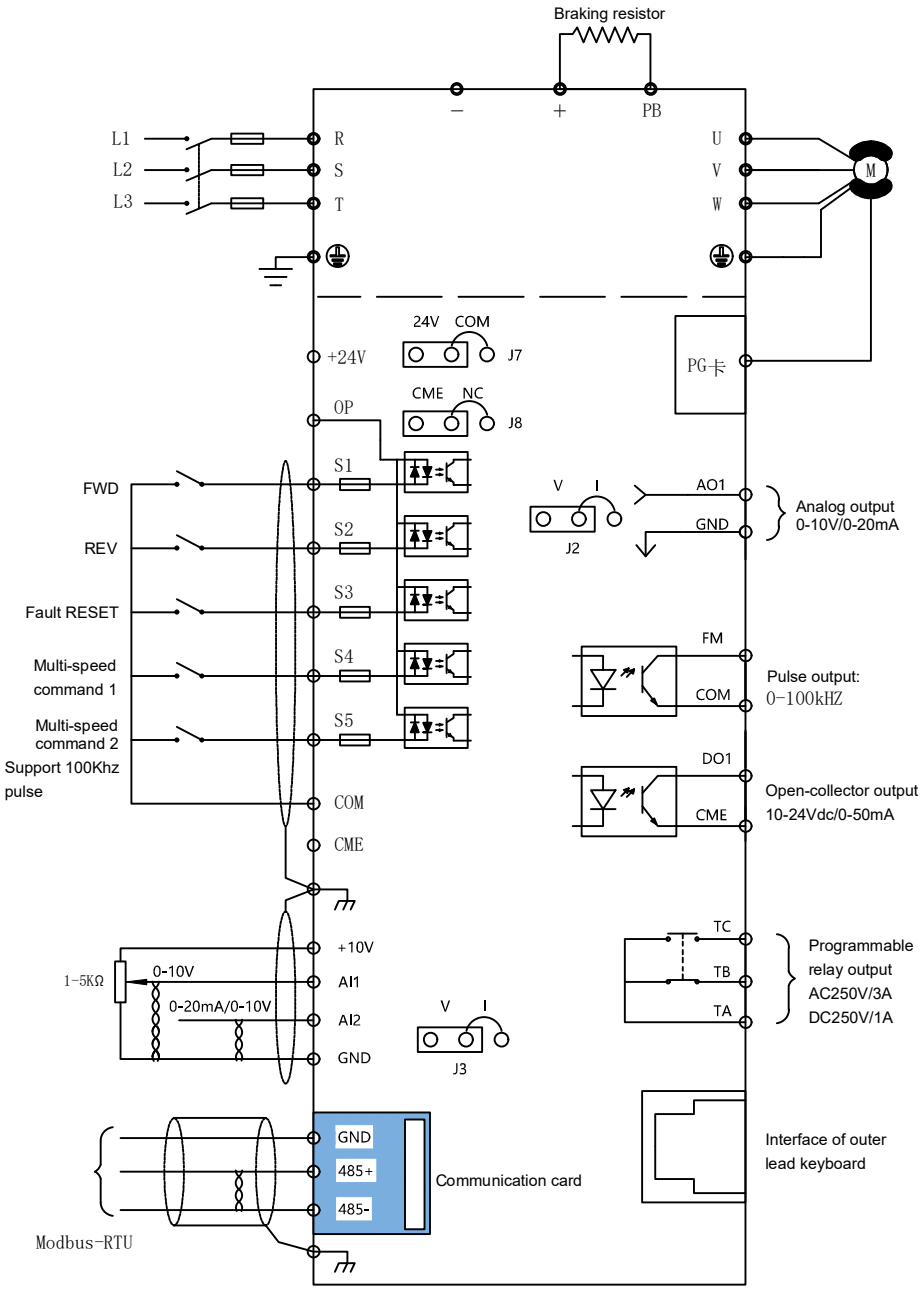


Figure 3-3 Wiring drawing of AV18 series VFD

Precautions:

a) Terminal ÿ represents the main circuit terminal, andÿ represents the control circuit terminal.

b) For AV18 series VFD, the G0.75ÿG18.5kW type is equipped as standard withbuilt-in brake unit, and no need for additional installation; for G22ÿG37kW type, the built-in brake unit is optional.

c) For G160kW type, as well as the type which is higher than G160kW, it's equipped as standard with external DC reactor. (VFD with high protection grade is not equipped as standard with DC reactor).

d) The braking resistor is selected according to the actual requirements of user, please refer to "Chapter 2 Selection Guide of Braking Resistor" for more details.

3.2 Main circuit terminals and wiring

Hazard!

- Confirm that the power switch is OFF, and use a multimeter to measure the bus voltage is lower than 36V before wiring operation; if not, electric shock may occur!
- The wiring operation shall be carried out by professional who has passed specific training, or it may cause injury to the operator or damage the equipment!
- This device must be reliably grounded; otherwise, the electric shock or fire hazard may occur!

Precaution

- Make sure that the input power is consistent with the rated value of VFD; otherwise, the VFD may be damaged!
- Confirm that the motor is compatible with the VFD; otherwise, the motor may be damaged or the VFD protection may be activated.
- It is prohibited to connect the power supply to the U, V and W terminals; otherwise, the VFD may be damaged!
- Do not connect directly the braking resistor to the DC bus (+), (-); otherwise, it may cause fire hazard!

Descriptions of main circuit terminal of three-phase VFD:

Terminal sign	Name	Descriptions
R、S、T	Input terminal of three-phase power supply	Connection point of AC input three-phase power supply
(+)、(-)	DC bus positive and negative terminals	Input point of common DC bus (connection point of external brake unit of G37kW and above power VFD)
(+)、PB	Connection terminal of braking resistor	Connection point of braking resistor of G37kW and lower power VFD
P、(+)	Connection terminal of external reactor	Connection point of external reactor of G37kW and above power VFD
U、V、W	VFD output terminal	Connect to the three-phase motor
⏚	Grounding terminal	Grounding terminal

Precautions for wiring:

a) Input power supply R, S, T: input side wiring of VFD, no phase sequence requirement

b) DC bus (+) and (-) terminals:

Note that the DC bus (+) and (-) terminals have residual voltage after power failure, please wait for 10 minutes and use multimeter to measure and confirm that it is less than 36V before contacting; otherwise, it may result in electric shock.

When external braking unit is selected for AV18 series G37kW and above power VFD, pay attention to (+) and (-) polarity, reverse connection is strictly prohibited;

otherwise, it may damage the VFD, even cause the fire hazard!

The wiring length of the braking unit shall not exceed 10m, and twisted pair or tight doubl -wire parallel wiring shall be used. Do not connect directly the braking resistor to the DC bus, which may cause damage to the VFD or even fire hazard.

c) Connection terminals (+) and PB of braking resistor: For AV18 series G30kW and lower power VFD, it is necessary to confirm the model of built-in brake unit, thus the connection terminal of braking resistor is valid.

During the model selection of braking resistor, please refer to the recommended value and the wiring distance shall be less than 5m; otherwise, the VFD may be damaged.

d) Connection terminals (+) and PB of external reactor:

When assembling the external connection terminals of the DC reactor of G37kW and above power VFD, remove the connecting plate between the P and (+) terminals, and connect the reactor between the two terminals.

e) VFD output side U, V, W: The output side of the VFD shall not be connected with capacitors or surge absorbers, otherwise the VFD protection may be activated frequently, even damage the VFD. In case the motor cable is too long, electric resonance is easy to occur due to the influence of distributed capacitance, thus causing the motor insulation damage or generating large leakage current to activate the VFD over-current protection. In case the length of motor cable is more than 50m, it is recommended to install output reactor or output filter; in case the length of motor cable is more than 100m, AC output reactor must be installed.

f) Grounding terminal ⏚:

The terminal must be reliably grounded and the resistance of the grounding wire must be less than 10ÿ. Otherwise, it may cause abnormal operation or even damage to the equipment. The grounding terminal and the N terminal of power null line must not be shared.

3.2.4 Control terminals and wiring

1. The terminals layout of control loop of AV18 VFD is shown as follows:

(Note: there is no short contact tag between AV18 CME and COM, OP and 24V, the user selects the wiring mode of CME and OP through J7 and J8 respectively.)

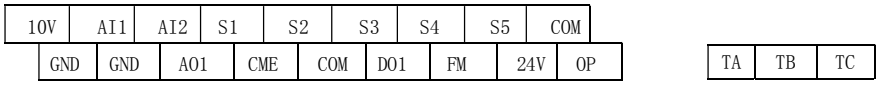


Figure 3-4 Layout of control loop terminals

2. Function description of control terminals:

Table 3-3 Function description of VFD control terminals

Type	Terminal symbol	Terminal name	Function description
Pow	+10V, GND	External power supply 10V	Provide + 10V power supply to the outside, the maximum output current is 10mA. It is generally used as the external potentiometer power supply, and the potentiometer range value is 1-5KΩ.
	+24V, COM	External power supply 24V	Provide + 24V power supply to the outside, it is generally used as the working power supply of digital input and output
	OP	Input terminal of external	Connect to +24 (factory default) If S1-S5 are driven by an external signal, the OP needs to be
Analog input	AI1, GND	Analog input terminal 1	Input voltage range: DC 0V-10V Input impedance:
	AI2, GND	Analog input terminal 2	Input range: DC 0V-10V / 0mA-20mA, it's determined by J3 jumper selection on the control board. Input impedance: voltage input 22KΩ, current input through impedance 500Ω.
Digital input	S1, COM	Digital input 1	Opto-coupler isolation, bipolar input compatible; input impedance: 2.2KΩ; voltage range of effective level input: 9-30V
	S2, COM	Digital input 2	
	S3, COM	Digital input 3	
	S4, COM	Digital input 4	
	S5, COM	Digital input 5, high speed pulse input	It not only has the features of S1-S5, but also can be used as the high-speed pulse input channel. Max. input frequency: 100Khz;Input impedance: 1.2 KΩ
Analog output	AO1, GND	Analog output 1	The voltage or current output is determined by the J2 jumper selection on the main control board. Output voltage range: 0-10V
Digital output	DO1, CME	Digital output 1	Opto-coupler isolation, bipolar open-collector output; output voltage range: 0-24V; output current range: 0mA-50mA Note: the digital output CME is internally isolated from the
	FM, CME	High-speed pulse output	Constrained by parameter A5-00: For high-speed pulse output, the maximum frequency is 100 Khz; for open-collector output, it is the same as the DO1 specifications.
Relay outpu	TA, TC	Normally open terminal	Contact driving capacity: 250Vac/3A, cosø0.4 30Vdc/1A
	TA, TB	Normally close terminal	
Jumper (wire)	J2	AO1	Voltage, current output selection, default voltage output
	J3	AI2	Voltage, current input selection, default voltage input

Chapter 4 Operation and Display

4 .1 Introductions of Operation and Display Interface

By employing the keyboard operation panel, it's available to carry out such operations to the VFD as function parameter modification, work state monitoring, running control (start and stop), etc., its appearance and functional area are shown as follows:

1 . Signs of key

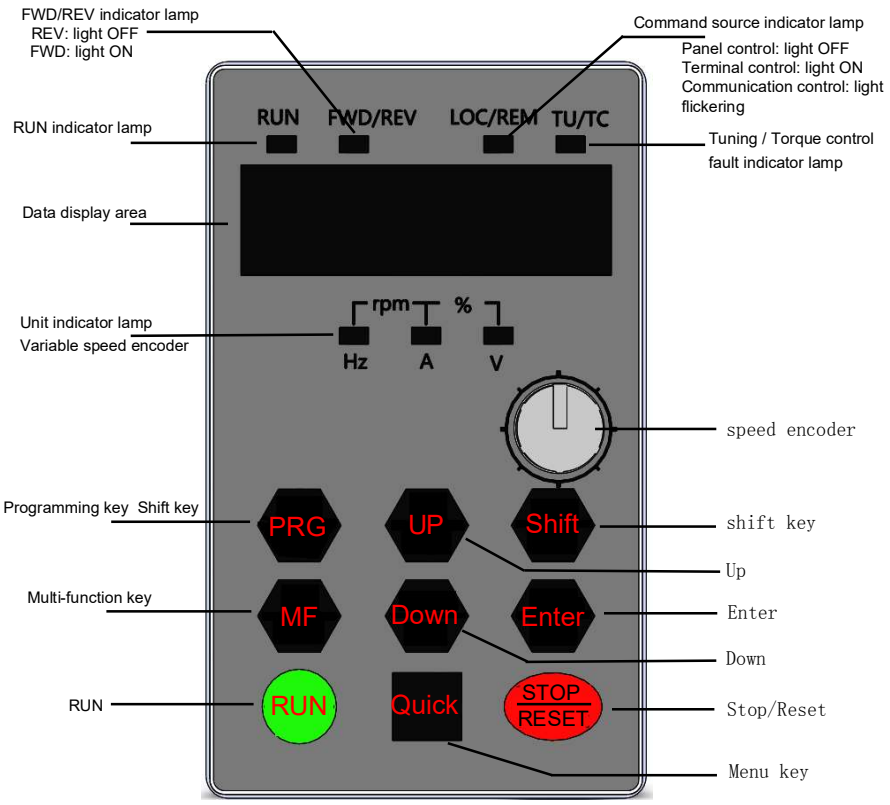


Figure 4-1 Operation Panel Schematic Diagram

2. Descriptions of function indicator lamp:

RUN: when the lamp is off, it means that the VFD is stopped; when the lamp is on, it means that the VFD is running.

LOC/REM: It's the indicator lamp of keyboard operation, terminal operation and remote operation (communication control); when the lamp is off, it indicates the control mode of keyboard operation; when the lamp is on, it indicates the control mode of terminal operation; when the lamp is flickering, it indicates the control mode of remote communication control.

FWD / REV: forward/reverse rotation indicator light; when the lamp is on, it indicates the reverse rotation state. TU/TC: tuning/torque control/fault indicator lamp; when the lamp is on, it indicates the torque control mode; when the lamp flickering slowly, it indicates the tuning state; when the lamp flicking quickly, it indicates the fault state.

3. Unit indicator lamp

Hz: frequency unit

A: current unit

V: voltage unit

RMP (Hz+A): speed unit

% (A+V): percentage

4. Digital display area:

Adopt 5-bit LED display, which can display the set frequency, output frequency, various monitoring data, alarm code, etc.

Table 4-1 Actual Correspondence and LED Display Correspondence Table

VGA display	Actual correspondence	VGA display	Actual correspondence	VGA display	Actual correspondence	VGA display	Actual correspondence
	0		6		C		N
	1		7		c		P
	2		8		D		R
	3		9		E		T
	4		A		F		U
	5、S		B		L		u

5. Keyboard Description Table:

Table 4-2 Key Function Table

Key	Name	Function
PRG	Programming key	Entry or Exit of Level 1 menu
ENTER	Enter key	Enter the menu screen level by level, conform the set parameters
UP	Up key	Increment of data or function code
DOWN	Down key	Decrement of data or function code
SHIFT	Right shift key	When modifying a parameter, a modification bit of the parameter may be selected; under the stop display interface
RUN	RUN	Under the keyboard operation mode, it can be used to carry out run
STOP/RESET	Stop/Reset	Under the running state, press this key to stop running; under the fault alarm state, the key is used to reset the fault, its characteristics are governed by the function code A7-02.
MF	Multi-function lection key	By employing this key, the VFD can realize the function switching selection according to A7-01, it may be defined as command source or direction quick switching.
RUN+ STOP	Free stop shortcut key	When the two keys are pressed simultaneously during the operation of the VFD, the free stop is realized.
PRG +▲	Parameter upload	Under the normal interface, press PRG key first, and then press PRG +▲ key at the same time: upload parameters from the control board to the keyboard, and the A lamp flickering when uploading
PRG +▼	Parameter download	Under the normal interface, press PRG key first, and then press PRG+▼ key at the same time: download parameters from the keyboard to the control board, and the, and the V lamp flickering when downloading
	Variable speed encoder	Set frequency value

Chapter 5 Function Parameter Table

AP-00 is set to a non-zero value, that is, the parameter protection password is set, under the function parameter mode and the user changing parameter mode, the parameter menu can be entered after the password is correctly entered if you want to cancel the password, AP-00 needs to be set to 0.

Group A represents the basic function parameter, and Group U represents the monitoring function parameter. The detailed information of symbols in the function table is shown as follows: "√": It indicates that the set value of this parameter can be changed both in stop and run states of the VFD "×": It means that the set value of the parameter cannot be changed when the VFD is in run state "○": It indicates that the parameter is the actual test record value and cannot be changed

P arameter Table of Basic Function

Function code	Name	Setting range	Factory	Change
A0 Basic function group				
A0-00	G/P type selection	1: G type (constant torque type) 2: P type (fan and water pump category)	1	×
A0-01	Motor control mode	0: Speed Sensor-less Vector Control (SVC) 1: Speed Sensor Vector Control (SVC) 2 : V/F control	2	×
A0-02	Command source selection	0: Operation panel command channel (LED off) 1:) Terminal command channel (LED on) 2 : Communication command channel (LED flickering)	0	√
A0-03	Selection of main frequency source A	0: Digital setting (preset frequency A0-08, UP / DOWN modifiable, non-memory after power-down) 1: Digital s etting (preset frequency A0-08, UP / DOWN modifiable, m emory after power-down) 2: AI1 3: AI2 4: AI3 5: HDI pulse setting (S5) 6 : Multi-segment command 7 : Simple PLC 8: PID 9 : Communication given	1	×
A0-04	Selection of auxiliary freq	Same as A0-03 (selection of main frequency source A)	0	×
A0-05	Range selection of auxiliary frequency source B during superposition	0 : relative to maximum frequency 1 : Relative to frequency source A	0	√
A0-06	Range of auxiliary frequency	0%～150%		
A0-07	Selection of frequency source	O nes place: Frequency source selection 0: Main frequency source A 1: Main and auxiliary operation results Operation relation is determined by tens place) 2: Switch between main frequency source A and auxiliary frequency source B 3: Switch between main frequency source A and main and auxiliary operation results	00	√

Function code	Name	Setting range	Factory	Change
		4: Switch between auxiliary frequency source B and main and auxiliary operation results Tens place: Main and auxiliary operation relation of frequency source 1: A-B 2: Max(A,B) 3: Min(A,B)		
A0-08	Preset frequency	0.00Hz～Max. Frequency (A0-10)	50.00Hz	√
A0-09	Operation direction	0: Consistent direction 1: Reverse direction	0	√
A0-10	Maximum frequency	50.00Hz～3200Hz	50.00Hz	×
A0-11	Upper limiting frequency source	0 : A0-12 setting 1: AI1 2: AI2 3: AI3 4: HDI pulse setting 5: Communication given	0	×
A0-12	Upper limiting frequency	Lower limiting frequency: A0-14～Max.	50.00Hz	√
A0-13	Offset of upper limiting frequency	0.00Hz～Max. frequency A0-10	0.00Hz	√
A0-14	Lower limiting frequency	0.00Hz～upper limiting frequency A0-12	0.00Hz	√
A0-15	Carrier frequency	0 .5kHz～16.0kHz	Model determination	√
A0-16	Carrier frequency is changed with temperature	0: No 1: Yes	1	√
A0-17	Acceleration time 1	0.00s～65000s	Model determination	√
A0-18	Deceleration time 1	0.00s～65000s	Model determination	√
A0-19	Acceleration and deceleration time unit	0: 1second 1: 0.1second 2: 0.01second	1	×
A0-21	Offset frequency of auxiliary frequency source B during superposition	0.00Hz～Max. frequency A0-10	0.00Hz	√
A0-22	Resolution of frequency command	1: 0.1Hz 2: 0.01Hz	2	×
A0-23	Stop memory selection of digital set frequency	0: no memory 0: no memory	1	√
A0-24	Reserve			
A0-25	Reference frequency of acceleration and deceleration time	0: Max. frequency (A0-10) 1: Set frequency 2: 100Hz	0	×
A0-26	Reference of frequency command UP/DOWN during operation	0: Operation frequency 1: Set frequency	0	×
A0-27	Command source bundling frequency source	Ones place: Operation panel command binding frequency source selection 0: no binding 1: Digital set frequency	0000	√

Function code	Name	Setting range	Factory	Change
		2: AI1 3: AI2 4: AI3 5: HDI pulse setting (S5) 6: Multi-segment speed 7: Simple PLC 8: PID 9: Communication given Tens place: terminal command binding frequency source selection Hundreds place: communication command binding frequency source selection Thousands place: automatically operate the binding frequency source selection		
A1 group Motor parameter				
A1-00	Motor type selection	0: Common asynchronous motor 1: Variable-frequency asynchronous motor	0	×
A1-01	Motor rated power	0.1kW～1000.0kW	Model determination	×
A1-02	Motor rated voltage	1V～2000V	Model determination	×
A1-03	Motor rated current	0.01A～655.35A (VFD power <=55kW) 0.1A～6553.5A (VFD power> 55kW)	Model determination	×
A1-04	Motor rated frequency	0.01Hz～Max. frequency	Model determination	×
A1-05	Motor rated speed	1rpm～65535rpm	Model determination	×
A1-06	Stator resistance of asynchronous motor	0.001Ω～ 65.535Ω(VFD power <=55kW) 0.0001Ω～ 6.5535Ω(VFD power> 55kW)	Tuning parameter	×
A1-07	Rotor resistance of asynchronous motor	0.001 Ω～65.535 Ω (VFD power<=55kW) 0.0001 Ω～6.5535 Ω (VFD power>55kW)	Tuning parameter	×
A1-08	Leakage inductive impedance of asynchronous motor	0.01mH～ 655.35mH (VFD power <=55kW) 0.001mH～ 65.535mH (VFD power> 55kW)	Tuning parameter	×
A1-09	Mutual inductive impedance of asynchronous motor	0.1mH～ 6553.5mH (VFD power <=55kW) 0.01mH～ 655.35mH (VFD power> 55kW)	Tuning parameter	×
A1-10	No-load current of asynchronous motor	0.01A～ A1-03 (VFD power <=55kW) 0.1A～ A1-03 (VFD power> 55kW)	Tuning parameter	×
A1-27	Number of encoder lines	1～65535	1024	×
A1-28	Encoder type	0:ABZ incremental encoder 1～4: reserve	0	×
A1-30	ABZ incremental encoder AB Phase	0: FWD 1: REV	0	×
A1-31	Encoder mounting angle	0.0° ～359.9°	0	×
A1-32 ～ A1-34	Reserve			
A1-36	Speed feedback PG break detection time	0.0: No action 0.1s～10.0s	0.0	×

Function code	Name	Setting range	Factory	Change
A1-37	Tuning selection	0 : No operation 1: Static tuning of asynchronous machine 2: Complete tuning of asynchronous machine	0	×
A 2 group Machine vector control parameters				
A2-00	Speed loop proportional gain 1	1～100	30	√
A2-01	Speed loop integral time 1	0.01s～10.00s	0.50s	√
A2-02	Switching frequency 1	0.00～A2-05	5.00Hz	√
A2-03	Speed loop proportional gain 2	1～100	20	√
A2-04	Speed loop integral time 2	0.01s～10.00s	1.00s	√
A2-05	Switching frequency 2	A2-02～Max. frequency	10.00Hz	√
A2-06	Vector control slip gain	50%～200%	100%	√
A2-07	Time constant of speed loop filtering	0.000s～0.100s	0.015s	√
A2-08	Vector control over-excitation gain	0～200	64	√
A2-09	Torque upper limiting source under speed control mode	0: Function code A2-10 setting 1: AI1 2: AI2 3: AI3 4: HDI pulse setting 5: Communication given 6: MIN (AI1,AI2) 7: MAX (AI1,AI2) The full range of option 1-7 corresponds to A2-10	0	√
A2-10	Digital setting of torque upper limit under speed control mode	0.0%～200.0%	150.0%	√
A2-13	Proportional gain of excitation adjustment	0～60000	2000	√
A2-14	Integral gain of excitation adjustment	0～60000	1300	√
A2-15	Proportional gain of torque adjustment	0～60000	2000	√
A2-16	Integral gain of torque adjustment	0～60000	1300	√
A2-17	Speed loop integral attribute	Ones place: integral separation 0: invalid 1 : valid	0	√
A3 group V/F control parameters				
A3-00	VF Curve setting	0: straight line V/F 1: multi-point V/F 2: square V/F 3: 1.2 th-power V/F 4: 1.4 th-power V/F 6: 1.6 th-power V/F 8: 1.8 th-power V/F 9: reserve 10: VF Complete separation mode	0	×

Function code	Name	Setting range	Factory	Change
		11: VF Semi-separation mode		
A3-01	Torque boost	0.0%: (automatic torque boost) 0.1%～30.0%	Model determination	√
A3-02	Torque boost cut-off frequency	0.00Hz～Max. frequency	50.00Hz	×
A3-03	Multi-point VF frequency point 1	0.00Hz～A3-05	0.00Hz	×
A3-04	Multi-point VF Voltage point 1	0.0%～100.0%	0.0%	×
A3-05	Multi-point VF frequency point 2	A3-03～A3-07	0.00Hz	×
A3-06	Multi-point VF Voltage point 2	0.0%～100.0%	0.0%	×
A3-07	Multi-point VF frequency point 3	A3-05～ Motor rated frequency (A1-04)	0.00Hz	×
A3-08	Multi-point VF Voltage point 3	0.0%～100.0%	0.0%	×
A3-09	VF Slip compensation gain	0.0%～200.0%	0.0%	√
A3-10	VF over-excitation gain	0～200	64	√
A3-11	VF oscillation suppression gain	0～100	Model determination	√
A3-13	VF Separated voltage source	0: Digital setting (A3-14) 1: AI1 2: AI2 3: AI3 4: HDI pulse setting (S5) 5: Multi-segment command 6: Simple PLC 7: PID 8: Communication given Note: 100.0% corresponding to motor rated voltage	0	√
A3-14	VF Separated voltage digital setting	0V～ Motor rated voltage	0	√
A3-15	AVR Automatic voltage stabilization	0: invalid 1: valid 2: invalid only when slowing down	0	√
A4 group Input terminal				
A4-00	S1 Terminal function selection	0: No function 1: FWD 2: REV (To be set to 1 or 2, it shall be used with A4-11) 3: three-wire operation control 4: FJOG 5: RJOG 6: Terminal UP 7: Terminal DOWN 8: STOP 9: RESET 10: RUN+STOP	1	×
A4-01	S2 Terminal function selection		2	×
A4-02	S3 Terminal function selection		9	×
A4-03	S4 Terminal function selection		12	×
A4-04	S5 Terminal function selection		13	×
A4-05	S6 Terminal function selection		14	×

A4-06	S7 Terminal function selection	11: External fault normally-open input 12: Multi-segment command terminal 1 13: Multi-segment command terminal 2 14: Multi-segment command terminal 3 15: Multi-segment command terminal 4 16: Select terminal 1 during acceleration/ deceleration time 17: Select terminal 2 during acceleration/ deceleration time 18: Frequency source switching 19: Up / DOWN setting clear (terminal, keyboard) 20: Control command switching terminal 1 21: No acceleration/deceleration 22: PID pause 23: PLC status reset 24: Wobble frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: No torque control 30: HDI (pulse) frequency input (valid only for S5) 31: reserve 32: Immediate DC braking 33: External fault normally-close input 34: Frequency modification enable 35: Reversal of PID action direction 36: External stop terminal 1 37: Control command switching terminal 2 38: PID integration pause 39:Switching between frequency source A and preset frequency 40: Switching between frequency source B and preset frequency 41: reserve 42: reserve 43: PID parameter switching 44: User defined fault 1 45: User defined fault 2 46: Speed control / torque control switching 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Reset current operating time 51: Brake release feedback 52: Brake feedback 53-59: Reserve	0	×
A4-07	S8 Terminal function selection		0	×
A4-08	Reserve		0	×
A4-09	Reserve		0	×

Function code	Name	Setting range	Factory	Change
A4-10	Sinput terminal filtering time	0.000s～1.000s	0.010s	√
A4-11	Terminal command type	0: Two-line type 1 1: Two-line type 2 2: Three-line type 1 3: Three-line type 2	0	×
A4-12	Terminal UP / DOWN changing rate	0.001Hz/s～65.535Hz/s	1.00Hz/s	√
A4-13	V Curve 1 minimum input	0.00V～A4-15	0.00V	√
A4-14	V Curve 1 minimum input corresponded setting	-100.0%～+100.0%	0.0%	√
A4-15	V Curve 1 maximum input	A4-13～+10.00V	10.00V	√
A4-16	V Curve 1 maximum input corresponded setting	-100.0%～+100.0%	100%	√
A4-17	V1 filtering time	V1 filtering time	0.10s	√
A4-18	V Curve 2 minimum input	0.00V～A4-20	0.00V	√
A4-19	V Curve 2 minimum input corresponded setting	-100.0%～+100.0%	0.0%	√
A4-20	V Curve 2 maximum input	A4-18～+10.00V	10.00V	√
A4-21	V Curve 2 maximum input corresponded setting	-100.0%～+100.0%	100.0%	√
A4-22	V2 filtering time	0.00s～10.00s	0.10s	√
A4-23	V Curve 3 minimum input	-10.00V～A4-25	-10.00V	√
A4-24	V Curve 3 minimum input corresponded setting	-100.0%～+100.0%	-100.0%	√
A4-25	V Curve 3 maximum input	A4-23～+10.00V	10.00V	√
A4-26	V Curve 3 maximum input corresponded setting	-100.0%～+100.0%	100.0%	√
A4-27	V3 filtering time	0.00s～10.00s	0.10s	√
A4-28	HDI minimum input	0.00kHz～A4-30	0.00kHz	√
A4-29	HDI minimum input corresponded setting	-100.0%～100.0%	0.0%	√
A4-30	ADI maximum input	A4-28～100.00kHz	50.00kHz	√
A4-31	HDI maximum input setting	-100.0%～100.0%	100.0%	√
A4-32	HDI filtering time	0.00s～10.00s	0.10s	√
A4-33	Reserve			
A4-34	AI is lower than the minimum input setting	Ones place: AI1 is lower than the minimum input setting selection 0: Corresponding minimum input setting 1: 0.0% Tens place: AI2 is lower than the minimum input setting selection Hundreds place: AI3 is lower than the minimum input setting	000	√
A4-35	S1 delay time	0.0s～3600.0s	0.0s	×
A4-36	S2 delay time	0.0s～3600.0s	0.0s	×

Function code	Name	Setting range	Factory	Change
A4-37	S3 delay time	0.0s～3600.0s	0.0s	×
A4-38	Effective mode selection 1 of S input terminal	0: positive logic 1: Anti-logic Ones place: S1 Tens place: S2 place: S3 Thousands places: S4 Ten-thousands place: S5	00000	×
A4-39	Effective mode selection 2 of S input terminal	0: positive logic 1: Anti-logic Ones place: S6 Tens place: S7 Hundreds place: S8 Thousands places: reserve Ten-thousands place: reserve	00000	×
A5 group Output terminal				
A5-00	FM Terminal output mode selection	0: Pulse output (HDO) 1: Open-collector output (FM)	0	√
A5-01	Control board FM open-collector output Function selection	0 : No output 1: VFD in operation 2: Fault output (fault shutdown) 3: Frequency level detection FDT1 output 4: Up to frequency 5: Zero-speed running (no output after shutdown) 6: Motor overload warning 7: VFD overload warning 8: Up to the set counting value 9: Up to the designed counting value 10: Up to length 11: PLC cycle is completed 12: Up to accumulative operation time 13) Frequency limiting 14) Torque limiting 15) Ready to run 16: AI1 > AI2 17: Up to upper limiting frequency 18: Up to lower limiting frequency (operation related) 19: Under-voltage status output 20: Communication setting 21: Positioning completed (reserve) 22: Positioning approach (reserve) 23: Zero-speed running 2 (output after shutdown)	0	√
A5-02	Function selection of relay 1 of control board (TA1-TB1-TC1)		2	√
A5-03	Function selection of relay 2 of expansion card (TA2-TC2)		43	√
A5-04	Reserve			
A5-05	Function selection of relay 3 of expansion card (TA3-TC3)		44	√

		24: Up to accumulative power-on time 25: Frequency level detection FDT2 output 26: Output after reaching frequency 1 27: Output after reaching frequency 2 28: Output after reaching Current 1 29: Output after reaching Current 2 30: Output after reaching timing 31: AI1 input over-limit 32: Off load 33: REV Operation 34: Zero current state 35: Up to module temperature 36: Output current over-limit 37: Up to lower limiting frequency (output after shutdown) 38: Alarm output (keep running) 39: Motor over-temperature warning 40: Up to current operation time 41: Fault output (fault occurs to equipment stop, and no output 43. Brake control 44. Motor fan control 45: Feedback over-voltage or disconnection alarm		
A5-06	Function selection of HDO high-speed pulse output	0: Operation frequency 1: Set frequency 2: Output current 3: Output torque (absolute value of torque) 4: Output power 5: Output voltage 6: HDI high-speed pulse input (S5 terminal, 100.% is corresponding to 100.0kHz) 7: AI1 8: AI2 9: AI3 (expansion card) 10: Length 11: Counting value 12: Communication setting 13: Motor speed 14: Output current (100.% is corresponding to 1000.0A) 15: Output voltage (100.% is corresponding to 1000.0V) 16: Output torque (actual value of torque)	0	√
A5-07	Function selection AO1 analog output		0	√
A5-08	Function selection of AO2 analog output (expansion card)		1	√
A5-09	HDO Max. output frequency	0.01kHz～100.00kHz	50.00kHz	√
A5-10	FM1 zero offset coefficient	-100.0%～+100.0%	0.0%	√

Function code	Name	Setting range	Factory	Change
A5-09	HDO Max. output frequency	0.01kHz～100.00kHz	50.00kHz	√
A5-10	FM1 zero offset coefficient	-100.0%～+100.0%	0.0%	√
A5-11	FM1 gain	-10.00～+10.00	1.00	√
A5-12	FM2 zero offset coefficient	-100.0%～+100.0%	0.0%	√
A5-13	FM2 gain	-10.00～+10.00	1.00	√
A5-17	Delay time of FM open-collector output	0.0s～3600.0s	0.0s	√
A5-18	Control board relay 1 TA1-TB1-TC1 output delay time	0.0s～3600.0s	0.0s	√
A5-19	Expansion card relay 2 TA2-TC2 output delay time	0.0s～3600.0s	0.0s	√
A5-20	Reserve			
A5-21	Expansion card relay 3 TA3-TC3 output delay time	0.0s～3600.0s	0.0s	√
A5-22	Valid status selection of DO output terminal	0: positive logic 1: Anti-logic Ones place: FM Tens place: TA1-TB1-TC1 Hundreds place: TA2-TC2 Thousands place: reserve Ten-thousands place: TA3-TC3	00000	√
A6 group Run-stop control				
A6-00	Start-up mode	0: Start directly 1: Start after speed tracking 2: Pre-excitation start (AC asynchronous machine)	0	√
A6-01	Speed tracking mode	0: Start from shutdown frequency 1: Start from zero-speed 2: Start from maximum frequency	0	×
A6-02	Speed tracking	1～100	20	√
A6-03	Start frequency	0.00Hz～10.00Hz	0.00Hz	√
A6-04	Start frequency keeping time		0.0s	×
A6-05	Start DC braking current / pre-excitation current		0%	×
A6-06	Start DC braking time / pre-excitation time	0.0s～100.0s	0.0s	×
A6-07	Acceleration/deceleration mode	0: Linear acceleration/deceleration 1: S curve acceleration/deceleration A 2: S curve acceleration/deceleration B	0	×
A6-08	Ratio of S-curve starting time	0.0%～（100.0%-A6-09）	30.0%	×
A6-09	Ratio of S-curve ending time	0.0%～（100.0%-A6-08）	30.0%	×
A6-10	Stop mode	0: Slow down and stop 1: Free stop	0	√

Function code	Name	Setting range	Factory	Change
A6-11	Starting frequency of stop DC brake	0.00Hz～Max. frequency	0.00Hz	√
A6-12	Waiting time of stop DC brake	0.0s～100.0s	0.0s	√
A6-13	Current of stop DC	brake 0%～100%	0%	√
A6-14	Time of stop DC brake	0.0s～100.0s	0.0s	√
A6-15	Brake usage rate	0%～100%	100%	√
A7 group Keyboard and display				
A7-00	LED second line normal display selection (valid only for KeyDual dual-display keyboard)	Same as the parameter definition of A7-03 and A7-04	4	√
A7-01	MF key function selection	0: MF.K invalid 1: Command channel and remote command channel of operation panel (terminal command channel or communication command channel) switching 2. Forward / Reverse switching 3. FJOG 4. RJOG	0	×
A7-02	Function of STOP/RESET key	0: Only under the keyboard operation mode, the stop function of STOP / RESET key is valid 1: Under any operation mode, the stop function of STOP / RESET key is valid.	1	√
A7-03	LED first line running display selection	00: Operation frequency 01: Set frequency 02: Bus voltage 03: Output voltage 04: Output current 05: Output power (kW) 06: Output torque (%) 07: S input terminal status 08: DO output terminal status 09: AI1 voltage (V) 10: AI2 voltage (V) 11: AI3 voltage (V)	0	√
A7-04	LED first line stopping display selection	12: Counter value 13: Length value 14: Loaded speed display 15: PID setting 16: PID feedback 17: PLC stage 18: HDI input (S5 terminal) pulse frequency (kHz) 19: Operation frequency 2 (Hz) 20: Remaining operation time 21: Voltage (V) before AI1 calibration 22: Voltage (V) before AI2 calibration	1	√

Function code	Name	Setting range	Factory	Change
		23: Voltage (V) before AI3 calibration 24. Linear speed 25: Current electrifying time (Hour) 26: Current operating time (Min) 27: HDI input pulse frequency (Hz) 28: Communication setting value 29: Encoder feedback speed (Hz) 30: Main frequency A display (Hz) 31: Auxiliary frequency B display (Hz)		
A7-05	Reserve			
A7-06	Loaded speed displaying coefficient	0.0001～6.5000	1.0000	√
A7-07	Radiator temperature of inverter module	0.0℃～100.0℃	-	○
A7-08	Reserve		-	○
A7-09	Accumulated operating time	0h～65535Hour	-	○
A7-10	Action point of brake voltage	100%～160%	120%	√
A7-11	Software Version No:	-	-	○
A7-12	Loaded speed displays decimal places	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	√
A7-13	Accumulated power-on time	0h～65535h	-	○
A7-14	Accumulated power consumption	0kw.H～65535kw.H	-	○
A8 group Auxiliary function				
A8-00	JOG running frequency	0.00Hz～Max. frequency	2.00Hz	√
A8-01	JOG acceleration time	0.0s～6500.0s	20.0s	√
A8-02	JOG deceleration time	0.0s～6500.0s	20.0s	√
A8-03	Acceleration time 2	0.0s～6500.0s	Model determination	√
A8-04	Deceleration time 2	0.0s～6500.0s	Model determination	√
A8-05	Acceleration time 3	0.0s～6500.0s	Model determination	√
A8-06	Deceleration time 3	0.0s～6500.0s	Model determination	√
A8-07	Acceleration time 4	0.0s～6500.0s	Model determination	√
A8-08	Deceleration time 4	0.0s～6500.0s	Model determination	√
A8-09	Hopping frequency 1	0.00Hz～Max. frequency	0.00Hz	√
A8-10	Hopping frequency 2	0.00Hz～Max. frequency	0.00Hz	√
A8-11	Amplitude of hopping frequency	0.00Hz～Max. frequency	0.01Hz	√
A8-12	FWD/REV dead-time	0.0s～3000.0s	0.0s	√
A8-13	REV control	0: Allow 1: Prohibit	0	√
A8-14	Operation mode of setting frequency below lower limiting frequency	0: Running at lower limiting frequency 1: Stop 2: Zero-speed running	0	√

Function code	Name	Setting range	Factory	Change
A8-15	Droop control	0.00Hz～10.00Hz	0.00Hz	√
A8-16	Set the limit of accumulated power-on time	0h～65000h	0h	√
A8-17	Set the limit of accumulated operation time	0h～65000h	0h	√
A8-18	Activate protection selection	0: no protection 1: protection	1	√
A8-19	Frequency detection value (FDT1)	0.00Hz～Max. frequency	50.00Hz	√
A8-20	Frequency detection lagged value (FDT1)	0.0%～100.0% (FDT1 level)	5.0%	√
A8-21	Frequency reaching detection width	0.0%～100.0% (Max. frequency)	0.0%	√
A8-22	Whether the hopping frequency is effective during acceleration / deceleration	0: invalid 1: valid	0	√
A8-25	Frequency point of acceleration time 1 and acceleration time 2 switching	0.00Hz～Max. frequency	0.00Hz	√
A8-26	Frequency point of deceleration time 1 and deceleration time 2 switching		0.00Hz	√
A8-27	Terminal jog takes priority	0:invalid 1:valid	0	√
A8-28	Frequency detection value (FDT2)	0.00Hz～Max. frequency	50.00Hz	√
A8-29	Frequency detection lagged value (FDT2)	0.0%～100.0% (FDT2 level)	5.0%	√
A8-30	Any parameter reaches the frequency detection value 1	0.00Hz～Max. frequency	50.00Hz	√
A8-31	Any parameter reaches the frequency detection width 1	0.0%～100.0% (Max. frequency)	0.0%	√
A8-32	Any parameter reaches the frequency detection value 2	0.00Hz～Max. frequency	50.00Hz	√
A8-33	Any parameter reaches the frequency detection width 2		0.0%	√
A8-34	Zero current detection level	0.0%～300.0% 100.0% corresponding to rated current of motor	5.0%	√
A8-35	Delay time of zero current detection	0.01s～600.00s	0.10s	√
A8-36	Over-limit value of output current	0 .0% (no detection) 0.1%～300.0% (motor rated current)	200.0%	√
A8-37	Delay time of output current over-limit detection	0.00s～600.00s	0.00s	√
A8-38	Any parameter reaches current 1	0.0%～300.0% (motor rated current)	100.0%	√
A8-39	Any parameter reaches the width of current 1		0.0%	√
A8-40	Any parameter reaches current 2	0.0%～300.0% (motor rated current)	100.0%	√
A8-41	Any parameter reaches the width of current 2		0.0%	√
A8-42	Timing function selection	0: invalid 1: valid	0	√
A8-43	Time selection of timing operation	0: A8-44 setting 1: AI1 2: AI2 3: AI3 Analog input range corresponds to A8-44	0	√
A8-44	Operation time of timing	0.0Min～6500.0Min	0.0Min	√
A8-45	Lower limit of AI1 input voltage protection value	0.00V～A8-46	3.10V	√

Function code	Name	Setting range	Factory	Change
A8-46	Upper limit of AI1 input voltage protection value	A8-45～10.00V	6.80V	√
A8-47	Up to module temperature	0℃～100℃	75℃	√
A8-48	Wake up pressure deviation	0.0%～100.0%	50.0%	√
A8-49	Reserve			
A8-50	Wake up delay time	0.0s～6500.0s	30.0s	√
A8-51	Sleep frequency	0.00Hz～Max. Frequency (A0-10)	0.00Hz	√
A8-52	Sleep delay time	0.0s～6500.0s	120.0s	√
A8-53	Current operation reaches the set time	0.0Min～6500.0Min	0.0Min	√
A9 group Fault and Protection				
A9-00	Selection of motor over-load protection	0: Prohibit 1: Allow	1	√
A9-01	Coefficient of motor over-load protection	20%～120%	100%	√
A9-02	Coefficient of motor over-load warning	50%～100%	80%	√
A9-03	Over-voltage stall gain	0～100	5	√
A9-04	Protection voltage of over-voltage stall	120%～150%	135%	√
A9-05	Over-current stall gain	0～100	30	√
A9-06	Protection current of over-current stall	100%～210%	200%	√
A9-07	Protection selection of short to ground after power-on	0: invalid 1: valid	0	√
A9-09	Automatic reset time of fault	0～20	0	√
A9-10	Action selection of DO output terminal during fault automatic reset	0: No action 1: Action	0	√
A9-11	Interval time of fault automatic reset	0.1s～100.0s	1.0s	√
A9-12	Input phase-loss contactor pull-in protection selection	0: Prohibit 1: Allow	1	√
A9-13	Output phase-loss protection selection	0: Prohibit 1: Allow	1	√
A9-14	First fault type	0 : No fault 1: IGBT short circuit 2: Acceleration over-current 3: Deceleration over-current 4: Constant speed over-current 5: Acceleration over-voltage 6: Deceleration over-voltage 7: Constant speed over-voltage 8: Buffer resistance over-load 9: Under-voltage 10: VFD over-load 11: Motor over-load 12: Input phase-loss 13: Output phase-loss	—	○
A9-15	Second fault type		—	○
A9-16	Third (latest) fault type		—	○

Function code	Name	Setting range	Factory	Change
		14: Module over-heat 15: External fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor tuning fault 20: Encoder PG card fault 21: Parameter reading and writing fault 22: VFD hardware fault 23: Earthing short circuit of motor 24-25: Reserve 26: Up to set operation time 27: User defined fault 1 28: User defined fault 2 29: Up to set power-on time 30: Off load 31: PID feedback loss during operation 40: Fast current limit timeout 41: Switching motor during operation 42: Excessive speed deviation 43: Motor over-speed 45: Motor over-temperature 51: Wrong initial position		
A9-17	Fr equency at the third (latest) fault	—	—	○
A9-18	Current at the third (latest) fault	—	—	○
A9-19	Bus voltage at the third (latest) fault	—	—	○
A9-20	Input terminal status at the third (latest) fault	—	—	○
A9-21	Output terminal status at the third (latest) fault	—	—	○
A9-22	VFD status at the third (latest) fault	—	—	○
A9-23	Electrified time at the third (latest) fault	—	—	○
A9-24	Running time at the third (latest) fault	—	—	○
A9-27	Frequency at the second fault	—	—	○
A9-28	Current at the second fault	—	—	○

Function code	Name	Setting range	Factory	Change
A9-29	Bus voltage at the second fault	—	—	○
A9-30	Input terminal status at the second fault	—	—	○
A9-31	Output terminal status at the second fault	—	—	○
A9-32	VFD status at the second fault	—	—	○
A9-33	Electrified time at the second fault	—	—	○
A9-34	Running time at the second fault	—	—	○
A9-37	Frequency at the first fault	—	—	○
A9-38	Current at the first fault	—	—	○
A9-39	Bus voltage at the first fault	—	—	○
A9-40	Input terminal status at the first fault	—	—	○
A9-41	Output terminal status at the first fault	—	—	○
A9-42	VFD status at the first fault	—	—	○
A9-43	Electrified time at the first fault	—	—	○
A9-44	Running time at the first fault	—	—	○
A9-47	Fault protective action selection 1	Ones place: Motor over-load (11) 0: Free stop 1: Stop according to the stop mode 2: Keep running Tens place: input phase-loss (12) Hundreds place: output phase-loss (13) Thousands place: external fault (15) Ten-thousands place: communication fault (16)	00000	√
A9-48	Fault protective action selection 2	Ones place: encoder PG card fault (20) 0: Free stop Tens place: function code reading and writing fault (21) 0: Free stop 1: Stop according to the stop mode Hundreds place: reserve Thousands place: Motor overheat (25) Ten-thousands place: Up to set operation time (26)	00000	√
A9-49	Fault protective action selection 3	Ones place: User defined fault 1 (27) 0: Free stop 1: Stop according to the stop mode 2 : Keep running Tens place: User defined fault 2 (28) 0: Free stop 1: Stop according to the stop mode 2 : Keep running Hundreds place: Up to set power-on time(29) 0: Free stop 1: Stop according to the stop mode	00000	√

Function code	Name	Setting range	Factory	Change
		2: Keep running Thousands place: off-load (30) 0: free stop 1: Slow down and stop 2: Reduce the speed to 7% of the rated frequency of the motor and continue to run when the load is not off, it will automatically return to the set frequency and run Ten-thousands place: PID feedback is lost during operation (31) is lost during operation (31) 0: Free stop 1: Stop according to the stop mode 2 : Keep running		
A9-50	Fault protective action selection 4	Ones place: excessive speed deviation (42) 0: Free stop 1: Stop according to the stop mode 2: Keep running Tens place: motor over-speed (43) Hundreds place: wrong initial position (51)	00000	√
A9-54	In case of fault, the frequency selection for keep running	0: Run at the current operating frequency 1: Run at set frequency 2: Run at upper limiting frequency 3: Run at lower limiting frequency 4: Run at abnormal standby frequency	0	√
A9-55	A bnormal standby frequency	0.0%～100.0% (100.0% corresponds to the maximum frequency A0-10)	100.0%	√
A9-56	Motor temperature sensor type	0: no temperature sensor 1: PT100	0	√
A9-57	Threshold value of motor overheating protection	0℃～ 200℃	110	√
A9-58	Threshold value of motor overheating alarm	0℃～200℃	90℃	√
A9-59	Action selection of instantaneous power-off	0: invalid 1: Slow down 2: Slow down and stop	0	√
A9-60	Pause to check the voltage after instantaneous stop	80.0%～100.0%	90.0%	√
A9-61	Judgment time for voltage rising after instantaneous power-off	0.00s～100.00s	0.50s	√
A9-62	Voltage judgment after instantaneous power-off	60.0%～100.0% (standard bus voltage)	80.0%	√
A9-63	Selection of off-load protection	0: invalid 1: valid	0	√
A9-64	Off-load detection level	0.0～100.0%	10.0%	√
A9-65	Off-load detection time	0.0～60.0s	1.0s	√
A9-67	Over-speed detection value	0.0%～50.0% (Max. frequency)	20.0%	√
A9-68	Over-speed detection time	0.0s not detect 0.1～60.0s	1.0s	√
A9-69	Detection value of excessive speed deviation	0.0%～50.0% (Max. frequency)	20.0%	√
A9-70	Detection time of excessive speed deviation	0.0s not detect 0.1s～60.0s	5.0s	√

Function code	Name	Setting range	Factory	Change
AA 组 PID 功能				
AA-00	PID given source	0: AA-01 setting 1: AI1 2: AI2 3: AI3 4: HDI pulse setting (S5) 5: Communication given 6: Multi-segment command given	0	√
AA-01	PID value given	0.0%～100.0%	50.0%	√
AA-02	PID feedback source	0: AI1 1: AI2 2: AI3 3: AI1-AI2 4: HDI pulse setting (S5) 5: Communication given 6: AI1+AI2 7: MAX (|AI1|, |AI2|) 8: MIN (|AI1|, |AI2|)	0	√
AA-03	PID action direction	0: Forward action 1: Reverse action	0	√
AA-04	PID Given feedback range	0～65535	1000	√
AA-05	Proportional gain Kp1	0.0～100.0	20.0	√
AA-06	Integral time Ti1	0.01s～10.00s	2.00	√
AA-07	Differential time Td1	0.000s～10.000s	0.000s	√
AA-08	PID reversal cut-off frequency	0.00～Max. frequency	0.00Hz	√
AA-09	PID deviation limit	0.0%～100.0%	0.0%	√
AA-10 ～ AA-20	Reserve			
AA-21	AA-21 Selection of feedback signal protection function	Ones place: selection of feedback disconnection detection 0: invalid 1: Alarm and operate at fixed frequency (TU / TC flickering, fixed operating frequency is set by AA-22). 2: Accidental shutdown, report E-31 feedback disconnection fault Tens place: feedback over-voltage protection selection. 0: invalid 1: Alarm and operate at fixed frequency (TU / TC flickering, fixed operating frequency is set by AA-25). 2: Accidental shutdown, report E-24, PID feedback the fault of “over/excessive”.	0	√
AA-22	Fixed operating frequency of feedback disconnection alarm	0.00Hz～A0-10	25.00Hz	√

Function code	Name	Setting range	Factory	Change
AA-23	PID feedback excessive detection value	20.0%～100.0%	100.0%	√
AA-24	PID feedback excessive detection time	0.0s～3600.0s	3.0s	√
AA-25	PID feedback the “over/excessive” alarm, set the fixed frequency of operation	0.00Hz～A0-10	0.00Hz	√
AA-26	PID feedback the detection value of disconnection	0.0%: no judgment, feedback loss 0.1%～100.0%	0.0%	√
AA-27	PID feedback the detection time of disconnection	0.0s～20.0s	0.0s	√
Ab group Wobble frequency, fixed length and counting				
Ab-00	Wobble frequency setting method	0: relative to center frequency 1: relative to maximum frequency	0	√
Ab-01	Wobble frequency amplitude	0.0%～100.0%	0.0%	√
Ab-02	Frequency amplitude of sudden hopping	0.0%～50.0%	0.0%	√
Ab-03	Period of wobble frequency	0.1s～3000.0s	10.0s	√
Ab-04	Triangular wave rising time of of wobble frequency	0.1%～100.0%	50.0%	√
Ab-05	Length setting	0m～65535m	1000m	√
Ab-06	Actual length	0m～65535m	0m	√
Ab-07	Pulse per meter	0.1～6553.5	100.0	√
Ab-08	Set counting value	1～65535	1000	√
Ab-09	Designated counting value	1～65535	1000	√
AC group Multi-segment command, simple PLC				
AC-00	Multi-segment command 0	-100.0%～100.0%	0.0%	√
AC-01	Multi-segment command 1	-100.0%～100.0%	0.0%	√
AC-02	Multi-segment command 2	-100.0%～100.0%	0.0%	√
AC-03	Multi-segment command 3	-100.0%～100.0%	0.0%	√
AC-04	Multi-segment command 4	-100.0%～100.0%	0.0%	√
AC-05	Multi-segment command 5	-100.0%～100.0%	0.0%	√
AC-06	Multi-segment command 6	-100.0%～100.0%	0.0%	√
AC-07	Multi-segment command 7	-100.0%～100.0%	0.0%	√
AC-08	Multi-segment command 8	-100.0%～100.0%	0.0%	√
AC-09	Multi-segment command 9	-100.0%～100.0%	0.0%	√
AC-10	Multi-segment command 10	-100.0%～100.0%	0.0%	√
AC-11	Multi-segment command 11	-100.0%～100.0%	0.0%	√
AC-12	Multi-segment command 12	-100.0%～100.0%	0.0%	√
AC-13	Multi-segment command 13	-100.0%～100.0%	0.0%	√
AC-14	Multi-segment command 14	-100.0%～100.0%	0.0%	√
AC-15	Multi-segment command 15	-100.0%～100.0%	0.0%	√
AC-16	Operation mode of simple PLC	0: Stop at the end of single operation 1: Maintain the final value at the end of single operation 2: Keep cycling	0	√
AC-17	Memory selection after simple PLC power-off	Ones place: memory after power off 0: not memory after power off	00	√

Function code	Name	Setting range	Factory	Change
		1. Memory after power-off Tens place: memory selection after equipment stop 0: not memory after equipment stop 1: Memory after equipment stop		
AC-18	Operation time of 0 segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-19	Acceleration/deceleration time selection of 0 segment command of simple PLC	0～3	0	√
AC-20	Operation time of 1st segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-21	Acceleration/deceleration time selection of 1st segment command of simple PLC	0～3	0	√
AC-22	Operation time of 2nd segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-23	Acceleration/deceleration time selection of 2nd segment command of simple PLC	0～3	0	√
AC-24	Operation time of 3rd segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-25	Acceleration/deceleration time selection of 3rd segment command of simple PLC	0～3	0	√
AC-26	Operation time of 4th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-27	Acceleration/deceleration time selection of 4th segment command of simple PLC	0～3	0	√
AC-28	Operation time of 5th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-29	Acceleration/deceleration time selection of 5th segment command of simple PLC	0～3	0	√
AC-30	Operation time of 6th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-31	Acceleration/deceleration time selection of 6th segment command of simple PLC	0～3	0	√
AC-32	Operation time of 7th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-33	Acceleration/deceleration time selection of 7th segment command of simple PLC	0～3	0	√
AC-34	Operation time of 8th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-35	Acceleration/deceleration time selection of 8th segment command of simple PLC	0～3	0	√
AC-36	Operation time of 9th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-37	Acceleration/deceleration time selection of 9th segment command of simple PLC	0～3	0	√
AC-38	Operation time of 10th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-39	Acceleration/deceleration time selection of 10th segment command of simple PLC	0～3	0	√
AC-40	Operation time of 11th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-41	Acceleration/deceleration time selection of 11th segment command of simple PLC	0～3	0	√
AC-42	Operation time of 12th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√

Function code	Name	Setting range	Factory	Change
AC-43	Acceleration/deceleration time selection of 12th segment command of simple PLC	0～3	0	√
AC-44	Operation time of 13th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-45	Acceleration/deceleration time selection of 13th segment command of simple PLC	0～3	0	√
AC-46	Operation time of 14th segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-47	Acceleration/deceleration time selection of 14th segment command of simple PLC	0～3	0	√
AC-48	thOperation time of 15 segment command of simple PLC	0.0S (h)～6553.5s (h)	0.0s (h)	√
AC-49	Acceleration/deceleration time selection of 15th segment command of simple PLC	0～3	0	√
AC-50	Operation time unit of simple PLC	0: s (second) 1: h (hour)	0	√
AC-51	Multi-segment command given Method	0: Function code AC-00 given 1: AI1 2: Ai2 3: AI3 4: HDI pulse 5: PID 6: Preset frequency (A0-08) given, UP / DOWN can be modified.	0	√
Ad group Communication parameter				
Ad-00	Baud rate	Ones place: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS Tens place: reserve Hundreds place: reserve housands place: CANlink Baud rate 0: 20 1: 50 2: 100 3: 125 4: 250	6005 √	

Function code	Name	Setting range	Factory	Change
		5：500 6：1M		
Ad-01	MODBUS Data format	0: non parity (8-N-2) 1: odd parity (8-E-1) 2: even parity (8-O-1) 3: non parity (8-N-1) (MODBUS is valid)	0	√
Ad-02	Local address	1～247, 0 is the broadcast address	1	√
Ad-03	Response delay	0ms～20ms (MODBUS is valid)	2	√
Ad-04	Communication exceeded time	0.0 (invalid) 0.1s～60.0s (MODBUS is valid)	0.0	√
Ad-05	Reserve			
Ad-06	Current resolution of communication reading	0：0.01A 1：0.1A	0	√
AE group Customized special parameters				
AF group Factory parameter group				
AP group Function management				
AP-00	User password	0～65535	0	√
AP-01	Parameter initialization	00: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information 04: Backup current parameters of user 05: Restore user backup parameters	0	×
AP-02	Installation selection of 485 isolated	0: not installed 1: installed	0	√
AP-03	Installation selection of PG expansion card	0: not installed 1: installed	0	√
AP-04	Modification attribute of function code	0: Modifiable 1: Cannot be modified	0	√
B0 group Torque control parameters				
B0-00	Speed / torque control mode selection	0: Speed control 1: Torque control	0	×
B0-01	Selection of torque setting source under torque control mode	0: Digital setting (B0-03) 1：AI1 2：AI2 3：AI3 4: HDI pulse 5: Communication given 6：MIN (AI1,AI2) 7: Max (AI1, AI2) (Full range of 1-7 options, corresponding to B0-03 digital setting)	0 ×	

Function code	Name	Setting range	Factory	Change
B0-03	Digital setting of torque under torque control mode	-200.0%～200.0%	150.0%	√
B0-05	Maximum forward frequency under torque control	0.00Hz～Max. frequency	50.00Hz	√
B0-06	Maximum reverse frequency under torque control	0.00Hz～Max. frequency	50.00Hz	√
B0-07	Acceleration time of torque control	0.00s～65000s	0.00s	√
B0-08	Deceleration time of torque control	0.00s～65000s	0.00s	√
Group B1 Virtual IO				
B1-00	Function selection of virtual XS1 terminal	0～59	0	×
B1-01	Function selection of virtual XS2 terminal	0～59	0	×
B1-02	Function selection of virtual XS3 terminal	0～59	0	×
B1-03	Function selection of virtual XS4 terminal	0～59	0	×
B1-04	Function selection of virtual XS5 terminal	0～59	0	×
B1-06	Status setting of virtual XS input terminal	0: invalid 1: Valid Ones place: virtual XS1 Tens place: XS2 Hundreds place: virtual XS3 Thousands places: virtual XS4 Ten-thousands place: virtual XS5	00000	×
B1-07	Function selection when AI1 terminal is used as S terminal	0～59	0	×
B1-08	Function selection when AI2 terminal is used as S terminal	0～59	0	×
B1-09	Function selection when AI3 terminal is used as S terminal	0～59	0	×
B1-10	Effective mode selection when AI terminal is used as S terminal	0: high level valid 1: low level valid Ones place: AI1 Tens place: AI2 Hundreds place: AI3	000	×
B1-11	Function selection of virtual XDO1 output	0: Internal short connected with physical Sx 1～44: See group A5 Physical DO output selection	0	√
B1-12	Function selection of virtual XDO2 output	0: Internal short connected with physical Sx 1～44: See group A5 Physical DO output selection	0	√
B1-13	Function selection of virtual XDO3 output	0: Internal short connected with physical Sx 1～44: See group A5 Physical DO output selection	0	√
B1-14	Function selection of virtual XDO4 output	0: Internal short connected with physical Sx 1～44: See group A5 Physical DO output selection	0	√
B1-15	Function selection of virtual XDO5 output	0: Internal short connected with physical Sx 1～44: See group A5 Physical DO output selection	0	√

Function code	Name	Setting range	Factory	Change
B1-16	Delay time of virtual XDO1 output	0.0s～3600.0s	0.0s	√
B1-17	Delay time of virtual XDO2 output	0.0s～3600.0s	0.0s	√
B1-18	Delay time of virtual XDO3 output	0.0s～3600.0s	0.0s	√
B1-19	Delay time of virtual XDO4 output	0.0s～3600.0s	0.0s	√
B1-20	Delay time of virtual XDO5 output	0.0s～3600.0s	0.0s	√
B1-21	Valid status selection of virtual XDO output terminal	0: positive logic 1: Anti-logic Ones place: XDO1 Tens place: XDO2 Hundreds place: XDO3 Thousands places: XDO4 Ten-thousands place: XDO5	00000	√
B5 Control and Optimization parameters				
B5-00	DPWM switching upper limit frequency	0.00Hz～15.00Hz	12.00Hz	√
B5-01	PWM Modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	√
B5-02	Selection of dead-zone compensation mode	0: No compensation 1: Compensation mode 1 2: Compensation mode 2	1	√
B5-03	Random PWM depth	0: Random PWM is invalid 1～10: PWM carrier frequency random depth	0	√
B5-04	Enable of fast current limit	0: Disable 1: Enable	1	√
B5-05	Current detection and compensation	0～100	5	√
B5-06	Under-voltage point setting	60.0%～140.0%	100.0%	√
B5-07	Reserve			
B5-08	Time adjustment of dead-zone	100%～200%	150%	√
B5-09	Over-voltage point setting	200.0V～2500.0V	Model determination	×

Monitoring Parameters Table

Function code	Name	Minimum unit	Communication address
U0 group Basic Monitoring Parameters			
U0-00	Operation frequency (Hz)	0.01Hz	7000H
U0-01	Setting frequency (Hz)	0.01Hz	7001H
U0-02	Bus voltage (V)	0.1V	7002H

U0-03	Output voltage (V)	1V	7003H
U0-04	Output current (A)	0.01A	7004H
U0-05	Output power (kW)	0.1kW	7005H
U0-06	Output torque (%)	0.1%	7006H
U0-07	S terminal input status	1	7007H
U0-08	DO terminal output status	1	7008H
U0-09	AI1 voltage (V)	0.01V	7009H
U0-10	AI2 voltage (V)	0.01V	700AH
U0-11	AI3 voltage (V)	0.01V	700BH
U0-12	Counter value	1	700CH
U0-13	Length value	1	700DH
U0-14	Speed display of load	1	700EH
U0-15	PID setting	1	700FH
U0-16	PID feedback	1	7010H
U0-17	PLC stage	1	7011H
U0-18	HDI input pulse frequency (Hz)	0.01kHz	7012H
U0-19	Feedback speed (unit: 0.01Hz)	0.01Hz	7013H
U0-20	Remaining operation time	0.1Min	7014H
U0-21	Voltage before AI1 calibration	0.001V	7015H
U0-22	Voltage before AI2 calibration	0.001V	7016H
U0-23	Voltage before AI3 calibration	0.001V	7017H
U0-24	Linear speed	1m/Min	7018H
U0-25	Current electrified time	1Min	7019H
U0-26	Current running time	0.1Min	701AH
U0-27	HDI input pulse frequency	1Hz	701BH
U0-28	Communication setting value	0.01%	701CH
U0-29	Encoder feedback speed	0.01Hz	701DH
U0-30	Main frequency A display	0.01Hz	701EH
U0-31	Auxiliary frequency B display	0.01Hz	701FH

U0-32	Reserve		
U0-33	Rotor position of synchronous machine	0.1°	7021H
U0-34	Motor temperature	1℃	7022H
U0-35	Target torque (%)	0.1%	7023H
U0-36	Rotation position	1	7024H
U0-37	Power factor angle	0.1°	7025H
U0-38	ABZ Position	1	7026H
U0-39	VF Separate target voltage	1V	7027H
U0-40	VF Separate output voltage	1V	7028H
U0-41	Visual display of input status of S terminal	1	7029H
U0-42	Visual display of output status of DO terminal	1	702AH
U0-43	Visual display of function status of S terminal 1 (function 01-function 40)	1	702BH
U0-44	Visual display of function status of S terminal 2 (function 41-function 80)	1	702CH
U0-45	Multi-segment speed		702DH
U0-46	Display the VFD rated current	1A	
U0-58	Reserve		703AH
U0-59	Setting frequency (%)	0.01%	703BH
U0-60	Operation frequency (%)	0.01%	703CH
U0-61	VFD status	1	703DH
U0-62	Current fault code	1	703EH
U0-63	Reserve	-	
U0-64	Reserve	-	
U0-65	Torque upper limit	0.01%	7041H

Chapter 6 Fault Diagnosis Remedy

6.1 Fault Alarm Remedy

There are 24 warning information and protection functions of AV18 series VFD. Once the fault occurs, the related protection function will be activated, the VFD stops outputting, the fault relay contact of the VFD operates, and the fault code is displayed on the VFD display panel. Before asking for service, users can conduct self-inspection according to the information described in this Section, analyze the cause of failure and find out the solution. If it is the reason stated in the dashed box, please contact us

Fault name	Inverter unit protection
Operation panel display	E-01
Causes of fault	1. Short circuit of VFD output loop 2. The wiring of motor and VFD is too long 3. Module over-heat 4. The internal wiring of the VFD is loose 5. Trouble occurs to the main control board 6. Trouble occurs to the drive board 7. Trouble occurs to the inverter module
Remedy	1. Eliminate the outside faults 2. Add reactor or output filter 3. Check the air conduct is not blocked, the fan works normally, and eliminate the existing problems. 4. Plug in all connecting wires 5. Asking for technical support 6. Asking for technical support 7. Asking for technical support

Fault name	Acceleration over-current
Operation panel display	E-02
Causes of fault	1. Grounding or short circuit of VFD output loop 2. Adopt vector control mode, and parameter identification is not performed. 3. Acceleration time is too short 4. Manual torque boost, or the V/F curve is not appropriate. 5. Low voltage 6. Start up the rotating motor 7. Another load is suddenly applied to the equipment during the process of acceleration. 8. Improper model selection of VFD, that is, too low power of the VFD.
R emedy	1. Eliminate the outside faults 2. Carry out the parameter identification of motor. 2. Add the acceleration time. 4. Adjust the manual lift torque or V/F curve 5. Adjust the voltage to normal range 6. Select the start-up mode of speed tracking, or start-up after the motor stops. 7. The load which is suddenly applied to the equipment during the process of acceleration shall be removed. 8. Select the VFD with larger power.

Fault name	Deceleration over-current
Operation panel display	E-03
Causes of fault	1. Grounding or short circuit of VFD output loop 2. Adopt vector control mode, and parameter identification is not performed. 3. The deceleration time is too short 4. Low voltage 5. Another load is suddenly applied to the equipment during the process of deceleration. 6. Brake unit and brake resistor are not installed
Remedy	1. Eliminate the outside faults 2. Carry out the parameter identification of motor. 3. Add the deceleration time. 4. Adjust the voltage to normal range 5. The load which is suddenly applied to the equipment during the process of acceleration shall be removed. 6. Install the brake unit and brake resistor

Fault name	Constant speed over-current
Operation panel display	E-04
Causes of fault	1. Grounding or short circuit of VFD output loop 2. Adopt vector control mode, and parameter identification is not performed. 3. Low voltage 4. Another load is suddenly applied to the equipment during operation. 5. Improper model selection of VFD, that is, too low power of the VFD.
Remedy	1. Eliminate the outside faults 2. Carry out the parameter identification of motor. 3. Adjust the voltage to normal range 4. The load which is suddenly applied to the equipment during the process of acceleration shall be removed. 5. Select the VFD with larger power.

Fault name	Acceleration over-voltage
Operation panel display	E-05
Causes of fault	1. The input voltage is too high 2. During the process of acceleration, an external force drives the motor to run. 3. Acceleration time is too short 4. Brake unit and brake resistor are not installed
Remedy	1. Adjust the voltage to normal range 2. Eliminate this external force, or add braking resistor. 3. Add the acceleration time. 4. Install the brake unit and brake resistor

Fault name	Deceleration over-voltage
Operation panel display	E-06
Causes of fault	1. The input voltage is too high 2. During the process of deceleration, an external force drives the motor to run. 3. The deceleration time is too short 4. Brake unit and brake resistor are not installed
Remedy	1. Adjust the voltage to normal range 2. Eliminate this external force, or add braking resistor. 3. Add the deceleration time. 4. Install the brake unit and brake resistor

Fault name	Constant speed over-voltage
Operation panel display	E-07
Causes of fault	1. The input voltage is too high 2. During operation, an external force drives the motor to run.
Remedy	1. Adjust the voltage to normal range 2. Eliminate this external force, or add braking resistor.

Fault name	Power supply failure
Operation panel display	E-08
Causes of fault	1. The input voltage is not within the range specified in the specifications.
Remedy	1. Adjust the voltage to the range required by the specifications.

Fault name	Under-voltage fault
Operation panel display	E-09
Causes of fault	1. Instantaneous power failure 2. The voltage of VFD input terminal is not within the range required by the specifications. 3. Abnormal bus voltage. 4. Abnormal rectifier bridge and buffer resistance 5. Trouble occurs to the drive board 6. Trouble occurs to the control board
Remedy	1. Reset fault 2. Adjust the voltage to normal range 3. Asking for technical support 4. Asking for technical support 4. Asking for technical support 4. Asking for technical support

Fault name	VFD over-load
Operation panel display	E-10
Causes of fault	1 . Over-load or the motor is blocked 2. Improper model selection of VFD, that is, too low power of the VFD.
Remedy	1. Reduce the load and check the motor and machinery conditions 2. Select the VFD with larger power.

Fault name	Motor over-load
Operation panel display	E-11
Causes of fault	1. Whether the motor protection parameter A9-01 is appropriately set or not. 2. Over-load or the motor is blocked 3. Improper model selection of VFD, that is, too low power of the VFD.
Remedy	1. Correctly set this parameter 2. Reduce the load and check the motor and machinery conditions 3. Select the VFD with larger power.

Fault name	Input phase-loss
Operation panel display	E-12
Causes of fault	1. Abnormal three-phase input power supply 2. Trouble occurs to the drive board 3. Trouble occurs to the lighting protection board 4. Trouble occurs to the main control board
Remedy	1. Check and eliminate the troubles existing in outside wires. 2. Asking for technical support 3. Asking for technical support 3. Asking for technical support

Fault name	Output phase-loss
Operation panel display	E-13
Causes of fault	1. The lead from the VFD to the motor is abnormal 2. When the motor is running, there s unbalance three-phase output of the VFD. 3. Trouble occurs to the drive board 4. Module fault
Remedy	1. Eliminate the outside faults 2. Check the three-phase winding of the motor is normal, or solve the problem. 3 . Asking for technical support 3. Asking for technical support

Fault name	Module over-heat
Operation panel display	E-14
Causes of fault	1. High environmental temperature 2. Clogged air duct 3. Damaged fan 4. Damaged module thermal resistor 5. Damaged inverter module
Remedy	1. Reduce the environmental temperature 2. Clean the air duct 3. Replace the fan. 4. Replace the thermal resistor 5. Replace the inverter module

Fault name	Trouble occurs to the external equipment
Operation panel display	E-15
Causes of fault	1. An external fault signal is input through the multi-function terminal S 2. Input the external fault signal through the virtual IO function
Remedy	1. Reset operation 2. Reset operation

Fault name	Communication failure
Operation panel display	Operation panel display E-16
Causes of fault	1. The upper computer is not working properly 2: Abnormal communication line 3. Incorrect setting of communication expansion card A0-28 4. Incorrect setting of communication parameters of Ad group
Remedy	1. Check the connection of upper computer 2. Check the connection of communication wire. 2. Check the connection of communication wire. 4. Correctly set the communication parameters

Fault name	Contact fault
Operation panel display	E-17
Causes of fault	1. Trouble occurs to the drive board and power supply 2. Contactor fault
Remedy	1. Replace the drive board or power supply 2: Replace the contactor.

Fault name	Current detection fault
Operation panel display	E-18
Causes of fault	1. Check that the Hall component is abnormal 2. Trouble occurs to the drive board
Remedy	1 Replace the Hall component 2. Replace the drive board

Fault name	Motor tuning fault
Operation panel display	E-19
Causes of fault	1. Motor parameters are not set according to the name-plate. 2. Parameter identification process timed out
Remedy	1. Correctly set motor parameters according to the name-plate. 1. Correctly set motor parameters according to the name-plate.

Fault name	Code disk fault
Operation panel display	E-20
Causes of fault	1. Encoder model does not match 2. Wrong connection of encoder line 3. Damaged encoder 4. PG card fault
Remedy	1. Correctly set the encoder type according to the actual conditions 2. Eliminate the wiring faults 3. Replace the encoder 4. Replace the PG card.

Fault name	EEPROM reading and writing fault
Operation panel display	E-21
Causes of fault	1. Damaged EEPROM chip
Remedy	1. Replace the main board.

Fault name	VFD hardware fault
Operation panel display	E-22
Causes of fault	1. Over-voltage exists 2. Over-current exists
Remedy	1. It shall be solved as over-voltage trouble 2. It shall be solved as over-current trouble

Fault name	Earthing short circuit
Operation panel display	E-23
Causes of fault	1. Earthing short circuit of motor
Remedy	1. Replace the cable or motor

Fault name	Fault when accumulative operation time reaches
Operation panel display	E-26
Causes of fault	1. The accumulative operation time reaches set value
Remedy	1. By employing the parameter initialization function, the record information can be cleared.

Fault name	User defined fault 1
Operation panel display	E-27
Causes of fault	1. Input the signal of user-defined fault 1 through the multi-function terminal S 2. Input the signal of user-defined fault 1 through virtual IO function
Remedy	1. Reset operation 2. Reset operation

Fault name	User defined fault 2
Operation panel display	E-28
Causes of fault	1. Input the signal of user-defined fault 2 through the multi-function terminal S 2. Input the signal of user-defined fault 2 through virtual IO function
Remedy	1. Reset operation 2. Reset operation

Fault name	Fault when accumulative electrified time reaches
Operation panel display	E-29
Causes of fault	1. The accumulative electrified time reaches set value
Remedy	1. By employing the parameter initialization function, the record information can be cleared.

Fault name	Off-load fault
Operation panel display	E-30
Causes of fault	1. The operating current of the VFD is less than A9-64
Remedy	1. Confirm whether the load is off or whether the parameter settings of A9-64 and A9-65 conform to the actual operating conditions

Fault name	PID feedback the fault of loss during operation
Operation panel display	E-31
Causes of fault	1. PID feedback is less than the setting value of AA-26
Remedy	1. Check the PID feedback signal or set AA-26 to an appropriate value

Fault name	Wave-by wave current limit fault
Operation panel display	E-40
Causes of fault	1. Over-load or the motor is blocked 2. Improper model selection of VFD, that is, too low power of the VFD.
Remedy	1. Reduce the load and check the motor and machinery conditions 2. Select the VFD with larger power.

Fault name	Failure of switching motor during operation
Operation panel display	E-41
Causes of fault	1.Change the current motor selection through the terminal during the operation of the VFD
Remedy	1. Switch the motor after the VFD stops

Fault name	Fault of excessive speed deviation
Operation panel display	E-42
Causes of fault	1. Incorrect setting of encoder parameters 2. The parameter identification is not performed. 3. Excessive speed deviation, the settings of detection parameters A9-69 and A9-60 are unreasonable
Remedy	1. Correctly set the encoder parameters 2. Carry out the parameter identification of motor. 3. Correctly set the detection parameters according to actual conditions.

Fault name	Motor over-speed fault
Operation panel display	E-43
Causes of fault	1. Incorrect setting of encoder parameters 2. The parameter identification is not performed. 3. Motor over-speed, the settings of detection parameters A9-69 and A9-60 are unreasonable
Remedy	1. Correctly set the encoder parameters 2. Carry out the parameter identification of motor. 3. Correctly set the detection parameters according to actual conditions.

Fault name	Motor over-temperature fault
Operation panel display	E-45
Causes of fault	1. The wiring of temperature sensor is loosen 2. Too high motor temperature
Remedy	1. Check the wiring of temperature sensor, and carry out troubleshooting. 2. Reduce the carrier frequency or take other heat dissipation measures to cool the motor

Fault name	Wrong initial position
Operation panel display	E-51
Causes of fault	1. Excessive deviation between the motor parameter and actual conditions.
Remedy	1. Re-confirm the motor parameters are correct, pay attention to the rated current, ensure the rated current is not set too small.

6.2 Common faults and their handling methods

The following faults may occur during the use the VFD, please refer to the following methods and carry out simple fault analysis:

Table 6 -1 Common faults and their handling methods

No.	Fault	Possible causes	Remedy
1	No display after power-on	Trouble occurs to the switching power The rectifier bridge is damaged the buffer resistance of VFD is damaged Control keyboard and keyboard fault; Disconnection between the control board, drive board, and keyboard;	Check the input power; Check the bus voltage; Re-plug the 8-core and 34-core wires; Asking for technical support;
2	Display program version	Relevant components on the control board are damaged; earthing short circuit of motor o r motor wire; Fault of Hall element; Too low grid voltage;	Re-plug the 8-core and 34-core wires; asking for technical support;
3	Display the “E-23” alarm after power-on	Earthing short circuit of motor or output line; damaged VFD;	Measure the insulation of the motor and the output wire with the tramegger, and seek the service of the manufacturer
4	After power-on, the VFD displays normally after operation, the VFD displays “program version” and stops immediately.	The fan is damaged or blocked short circuit of wiring of outside control terminal	Replace the fan eliminate the outside short circuit fault
5	Frequently report E-14 (module over-heat) fault	The carrier frequency is set too high; the fan is damaged or the air duct is blocked; the internal components of the VFD are damaged (thermocouple or other components);	Reduce the carrier frequency (A0-15); Replace the fan and clean the air duct; Seek the service of the manufacturer;
6	When the VFD is running, the motor fails to rotate	Motor and motor line; Incorrect setting of VFD parameter (motor parameter); Poor connection between drive board and control board Drive board failure;	Re-confirm the connection between the VFD and the motor, replace the motor or remedy the mechanical trouble; Check and reset the motor parameters;
7	Input terminal failure	Incorrect parameter setting External signal error; OP and 24V jumper wires are loosen; Control board fault;	Check and reset related parameters of A4 group Reconnect the external signal line; Re-confirm OP and 24V jumper wires; Asking for technical support;

No.	Fault	Possible causes	Remedy
8	In the case of closed-loop vector control, motor speed cannot be increased	Encoder failure; The encoder is connected with wrong wire or poor contact PG card failure; Drive board failure;	Replace the code disk and reconfirm the wiring; Replace the PG card; Asking for technical support;
9	The VFD reports over-current and over-voltage faults frequently.	Incorrect parameter setting of the motor; The acceleration and deceleration times are not suitable Load fluctuation;	Reset motor parameters or perform motor tuning; Appropriately set the acceleration and deceleration times; Asking for technical service;
10	Report E-17 after power-on or during	Soft start contactor fails to pick-up	Check the contactor, ensure there is no trouble occurs to it; Check the 24V power supply of contactor, ensure the power is normally supplied
11	After power-on, it displays 	Relevant components on the control board are damaged	Replace the control board

Appendix D: AV18 Series Modbus Communication Protocol

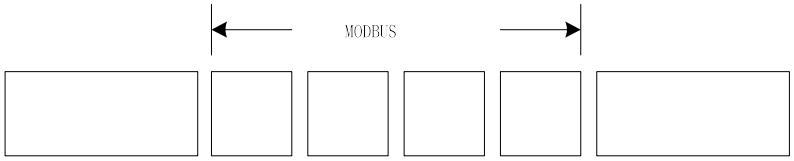
AV18 series VFD supports four communication protocols: Modbus-RTU, CANopen, CANlink and Profibus-DP, and the user programmable cards and point-to-point communications are derived from the CANlink protocol. By employing these communication protocols, the upper computer can control and monitor the VFD operation, as well modify and check the function parameters of the VFD.

The communication data of AV18 series VFD can be divided into parameter data and non-parameter data, and the latter includes operation commands, operation status, operation parameters, alarm information and the like.

I. Communication Configuration

The communication baud rate is set by Ad-00, and the data format is set by Ad-01.

II. The format of the protocol is shown as follows:



Appendix D Figure 1 MODBUS Protocol Format

III. Protocol Format Description

1. Data Type

All data are expressed in hexadecimal notation.

2. Lower computer address

The address of the VFD is set by Ad-02, 0 is the broadcast address, and the lower computer address can be set to 1～247.

3. Read function code

Function code 03: the function code representing the read variable Realized functions: read the VFD operation status, monitoring parameters, fault information and function parameters.

(1) Address distribution of readable parameters:

Function	Address	Data & data meanings
Running status	3000H	0001: FWD
		0002: REV
		0003: Stop
Monitoring parameter	1000H	Frequency / PID / torque communication setting values (-10000～10000) (decimal)
	1001H	Running frequency (%)
	1002H	Bus voltage
	1003H	Output voltage
	1004H	Output current:

	1005H	Output power
	1006H	Output torque
	1007H	Running speed
	1008H	Sterminal input sign
	1009H	DO terminal output sign
	100AH	AI1 voltage
	100BH	AI2 voltage
	100CH	AI3 voltage
	100DH	Counting value input
	100EH	Length value input
	100FH	Load speed
	1010H	PID setting
	1011H	PID feedback
	1012H	PLC step
	1013H	HDI input pulse frequency, unit 0.01kHz
	1014H	Feedback speed, unit: 0.1Hz
	1015H	Remaining operation time
	1016H	Voltage before AI1 calibration
	1017H	Voltage before AI2 calibration
	1018H	Voltage before AI3 calibration
	1019H	Linear speed
	101AH	Current electrified time
	101BH	Current running time
	101CH	HDI input pulse frequency, unit 1Hz
	101DH	Communication setting value
	101EH	Actual feedback speed
	101FH	Main frequency A display
	1020H	Auxiliary frequency B display
Fault	8000H	0000: No fault
		0001: IGBT short circuit
		0002: Acceleration over-current
		0003: Deceleration over-current
		0004: Constant speed over-current
		0005: Acceleration over-voltage
		0006: Deceleration over-voltage

		0007: Constant speed over-voltage
		0008: Buffer resistance over-load Fault
		0009: Under-voltage fault
		000A: VFD over-load
		000B: Motor over-load
		000C: Input phase-loss
		000D: Output phase-loss
		000E: Module over-heat
		000F: External fault
		0010: Communication fault
		0011: Contactor fault
		0012: Current detection fault
		0013: Motor tuning fault
		0014: Encoder / PG card fault
		0015: Parameter reading and writing fault
		0016: VFD hardware fault
		0017: Earthing short circuit of motor
		0018: reserve
		0019: reserve
		001A: Up to set operation time
		001B: User defined fault 1
		001C: User defined fault 2
		001D: Up to set power-on time
		001E: Off load
		001F: PID feedback loss during operation
		0028: Fast current limit timeout
		0029: Switching motor during operation
		002A: Excessive speed deviation
		002B: Motor over-speed
		002D: Motor over-temperature
		005A: Incorrect setting of number of encoder lines
		005B: Encoder not connected
		005C: Wrong initial position
		005E: Speed feedback fault
Function	The hexadecimal	Corresponding to the current value of function code

	High address: FX Low address: YZ	
Group number of function code	Communication access address	
A0～AE group	F000H～FEFFH For example, the function code is AC.21, the address is represents as	
AP group	1F00H～1F04H	
b0 group	A000H～A008H	
b1 group	A100H～A115H	
b5 group	A500H～A509H	
U0 group	0x7000～0x70FF	

☞Note: All parameters read from the VFD are represented by hexadecimal system, and the values are integers after the decimal point is ignored.

☞Note: The function parameter address of the VFD is divided into such two parts as high byte and low byte; the high byte indicates the group number where the function parameter is located at, and the low byte indicates the number of the function parameter in the group, which needs to be converted into hexadecimal.

(2) Communication frame content

Frame content sent by the upper computer to the VFD:

Lower	Function	Parameter	Parameter	Reading	Reading	Parity bit	Parity bit

Frame content that VFD responses to the upper computer

Lower	Functio	Numbe	First	First data	:::	Thenth	Thenth	Parity bit	Parity bit

(3) Example

The upper computer has read two parameters from the VFD, that is, running frequency and bus voltage the two parameters corresponding to the address of 1001H and 1002H respectively,and the upper computer needs to send the following data the the VFD:

Lower computer address	Function code	Parameter address (high byte)	Parameter address (low byte)	Reading quantity (high byte)	Reading quantity (low byte)	CRC check (high byte)	CRC check (low byte)
01	03	10	01	00	02	91	0B

The VFD frequency is set to 50.00Hz (the corresponded hexadecimal data shall be 1388H), and the bus voltage is 540.0V (the corresponded hexadecimal data shall be 1388H) Then the VFD feeds back the following data to the host upper computer: in the case of n = 2, it is the number of read variables.

Lower computer address	Function code	Number of read bytes (2*n)	First data (high byte)	First data (low byte)	Second data (high byte)	Second data (low byte)	CRC check (high byte)	CRC check (low byte)
01	03	04	13	88	15	18	70	07

4. Write function code

Function code 06: represent the function code which writes variable. Realized function: Rewrite the VFD control command, frequency command and function parameter. Only single VFD parameter can be modified at one time

(1) Distribution of writable parameter addresses:

Function name	Address	Data & data meanings
Communication control command	2000H	0001: FWD
		0002: REV
		0003. FJOG
		0004. RJOG
		0005: Free stop
		0006: Slow down and stop
		0007: Fault reset
Frequency / PID / Torque Communication Set address of frequency value	1000H	0.00%～100.00%. When it s set to 1000 (the corresponded hexadecimal number shall be 2710H), it corresponds to maximum frequency, maximum PID setting, or maximum torque.
Password address	1F00 H	0.0%～100.0%
Relay setting	2001 H	BIT0: Reserve BIT1: TA3-TC3 relay 3 output control BIT2: TA1-TB1-TC1 relay 1 output control BIT3: TA2-TC2 relay 2 output control BIT4: SP1 output control BIT5: XDO1 BIT6: XDO2 BIT7: XDO3 BIT8: XDO4 BIT9: XDO5
FM1 output control	2002H	0～7FFF indicates 0%～100%
FM2 output control	2003H	0～7FFF indicates 0%～100%
Pulse (HDI) output control	2004H	0～7FFF indicates 0%～100%
Group number of function code	Communication access address	Address of function code in communication modification RAM
A0～AE 组	F000H～FEFFH For example, the function code is AC.21, the address is represents as FC15H	0000H～0EFFH For example, the function code is AC-21, the address is represents as 0C15H

Function name	Address	Data & data meanings
AP group	1F00H～1F04H	0F00H～0F04H
b0 group	A000H～A008H	4000H～4008H
b1 group	A100H～A115H	4100H～4115H
b5 group	A500H～A509H	4500H～4509H

☞Note: If the EEPROM of parameter of the function code is written frequently, it will reduce its service life, some parameters in the communication mode do not need to store, only need to modify the RAM value.

☞Note: The communication setting value is the percentage of the relative value, 10000 corresponds to 100.00%, -10000 corresponds to -100.00%. For frequency dimension data, the percentage is a percentage of the relative maximum frequency (A0-10) for torque dimension data,the percentage is A2-10 (torque upper limit number setting).

(2) Communication frame content

Frame content sent by the upper computer to the VFD:

Lower	Functio	Parameter	Parameter	Data (high)	Data	Parity bit	Parity bit

Frame content that VFD responses to the upper computer: the VFD returns the same data as the upper computer.

(3) For example Example 1:

Modify the acceleration time of the VFD to 30.0s by the upper computer, corresponding to the hexadecimal data 012CH, and save the set value after power failure. Acceleration time A0-17 corresponds to hexadecimal address: F011H.

And the upper computer shall send the following data to the VFD:

Lower computer address	Function code	Parameter address (high byte)	Parameter address (low byte)	Data (high byte)	Data (low byte)	CRC check (high byte)	CRC check (low byte)
01	06	F0	11	01	2C	EA	82

Then the VFD returns the following data to the upper computer:

Lower computer address	Function code	Parameter address (high byte)	Parameter address (low byte)	Data (high byte)	Data (low byte)	CRC check (high byte)	CRC check (low byte)
01	06	F0	11	01	2C	EA	82

Example 2:

Modify the deceleration time of the VFD to 30.0s by the upper computer, corresponding to the hexadecimal data 012CH, but not save the set value after power failure. The deceleration time A0.18 corresponds to hexadecimal address: 0012H.

And the upper computer shall send the following data to the VFD:

Lower computer address	Function code	Parameter address (high byte)	Parameter address (low byte)	Data (high byte)	Data (low byte)	CRC check (high byte)	CRC check (low byte)
01	06	00	12	01	2C	29	82

Then the VFD returns the following data to the upper computer:

Lower computer address	Function code	Parameter address (high byte)	Parameter address (low byte)	Data (high byte)	Data (low byte)	CRC check (high byte)	CRC check (low byte)
01	06	00	12	01	2C	29	82

5. CRC check

Based on the 16-bit CRC check of MODBUS-RTU, a check high bit and a check low bit are obtained. The CRC check function is shown as follows:

```
unsigned int crc_chk_value（unsigned char *data_value,unsigned char length）
{
                    unsigned int crc_value=0xFFFF;
                    int i;
                    while（length--）
                    {
                        crc_value^=*data_value++;
                        for（i=0;i<8;i++）
                        {
                            if（crc_value&0x0001）
                            {
                                crc_value=（crc_value>>1）^0xa001;
                            }
                            else
                            {
                                crc_value=crc_value>>1;
                            }
                        }
                    }
                    return（crc_value）;
  }
```

Warranty Agreement

1. If, within one month from the date of delivery, the product is proved to be unqualified after inspection by the manufacturer, it can be repaired, replaced or returned free of charge (the outer package is in good condition) (only in China).

2. If, within six months from the date of delivery, the product is proved to be unqualified after inspection by the manufacturer, it can be repaired or replaced free of charge (only in China).

3. If, within eighteen months from the date of delivery, the product is proved to be unqualified after inspection by the manufacturer, it can be repaired free of charge (only in China).

4. If the failure is caused by the following reasons, it shall be paid for repair even during the warranty period:

4.1 4.1 Problems caused by incorrect operation (subject to the Operating Instruction), self-repair or modification without permission

4.2 In case the VFD is used not in accordance with the standards and specifications, and resulting in any VFD failure, it shall not be covered by the warranty.

4.3 Problems caused by VFD falling or improper handling after leaving the factory.

4.4 Aging or failure of devices due to poor environment (penetration of corrosive gases or liquids).

4.5 Damage caused by earthquake, fire, wind and fire disaster, lightning stroke, abnormal voltage or other natural disasters.

4.6 Damage due to transportation. (Note: The transportation method shall be designated by the customer, and the Company shall assist in handling the formalities goods transfer on behalf of the customer).

4.7 Unauthorized tearing or tampering of product bar-code.

4.8 The payment is not paid in accordance with the purchase agreement.

4.9 The installation, wiring, operation, maintenance or other using conditions cannot be objectively described to the service unit of the Company.

4.10 The Company s G160KW and above power VFD are equipped as standard with direct current reactors if the equipped reactor is not used as required, and resulting any VFD damage, it shall not be covered by the warranty.

5. All products manufactured by the Company are provided with paid life-long services. If the products you purchased have any quality problems within the warranty scope, we will respond in 24 hours after receiving the failure information and arrive at the site as soon as possible, and finish the after-sales service work in time.

6. If you have any doubts or questions, please feel free to contact the agent or the manufacturer directly.