



WECON VM AC Drive User Manual (V2.0)

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Preface

Thank you for choosing WECON VM Series AC Drive.

This user manual introduces the technical specifications, installation instructions, functions and performance of VM Series AC Drive properly. Please read this user manual carefully before carrying out works such as installation, commissioning, maintenance, etc.

You are specially warned to read and understand safety precaution items of this manual before using this product, and to ensure that relevant electrical installation testers' professional qualification shall be in line with the provisions of the labor supervision department, and the electrical and environmental conditions for product use shall be in conformity with relevant national standards.


Be sure to verify that the wiring is correct before powering on the product. Before starting the product, it is necessary to debug to ensure correct motor rotating direction.


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1 Safety precautions

■ Warning sign

 **DANGER:** Indicates that failure to comply with the notice will result in severe personal injury or even death.

 **WARNING:** Indicates that failure to comply with the notice will result in moderate personal injury, property damage or equipment damage.

WARNING

- ◎ Do not install or operate any AC Drive that is damaged or with missing parts. Failing to follow this rule can result in facility damage or severe injury.
- ◎ When installing or handling the AC Drive, please hold the bottom of the product rather than the case only, to prevent its falling and being damaged.
- ◎ Install the AC Drive on nonflammable material like metal, and keep away from flammable or explosive object, heat source, and similar environment. Otherwise, fire may be caused.
- ◎ When AC Drive is installed inside an electrical cabinet or other kind of enclosure, please install fans or other cooling devices, and keep ventilation well enough to ensure the enclosure temperature below 40℃, or the AC Drive may be damaged due to extreme high temperature.
- ◎ Before wiring, ensure the AC Drive rated input voltage and phases are compatible with the input power source, or fire or personal injury may be caused.
- ◎ Never connect the AC power supply to output terminals U, V and W. Otherwise, the AC Drive will be damaged and the warranty is invalid.
- ◎ Never carry out withstand voltage test to the AC Drive, for example by a megohmmeter. Otherwise, it may cause damage to the AC Drive.
- ◎ The connecting cable of the main circuit terminal should use an insulating sleeve.
- ◎ When the cable length between the AC Drive and the motor exceeds 50 meters, an output reactor is recommended to be used.
- ◎ Do not use a circuit breaker to control the start and stop of the AC Drive. Otherwise, the AC Drive may be damaged.
- ◎ Since the AC Drive makes the motor running speed from low to high in a short time, please confirm that the motor and equipment are in the allowed running range before running.
- ◎ Do not touch due to high temperature of the heat sink and braking resistor.
- ◎ The factory parameters of the AC Drive can meet the requirements of most equipment operation. Under normal circumstances, please do not modify the AC Drive parameters at will. Even if there is some special applications need to change the AC Drive parameters, only necessary parameters could be changed. Otherwise, AC Drive damage may be caused.
- ◎ The PCB board has a CMOS integrated circuit. Do not touch it with your hands, otherwise, static electricity will damage the PCB board.

DANGER

- ◎Wiring must be completed by qualified professional electricians, otherwise, there may be electric shock or damage to the AC Drive.
- ◎The power must be disconnected during wiring; otherwise, it may cause electric shock or fire.
- ◎The grounding terminal should be effectively grounded; otherwise, the outer casing of the AC Drive may be energized.
- ◎Do not touch the main circuit terminals, otherwise, it may cause electric shock.
- ◎Terminals for brake resistor are (+) and PB. Do not wire to other terminals, otherwise, fire may be caused.
- ◎It is only allowed to power on the AC Drive after the wiring is finished and its cover is reinstalled. It is strictly prohibited to remove the cover of AC Drive while power is on. Otherwise, it may cause electric shock.
- ◎Before programming the AC Drive with fault auto reset or restart option after power off, the mechanical device need to be implemented with safety protection measures first. Otherwise, personal injury will be caused.
- ◎“ STOP/RESET” key may become invalid as a result of some function setting. It is recommended to install an independent emergency circuit breaker for the AC Drive control system, otherwise, or personal injury may be caused.
- ◎When the power is on, there may be electricity in the AC Drive’s terminals even if it is in stop mode. Do not touch U, V, W terminals and motor connection terminals, or electrical shock may be caused.
- ◎Never touch the AC Drive connection terminals when power is on. Otherwise, it may cause an electrical shock.
- ◎Only qualified electricians can be authorized to do the jobs of maintenance, checking, or parts replacement.
- ◎After the power supply is OFF, make sure the charge LED is OFF and the residual voltage does not exist, or wait for at least 10 minutes before carrying out maintenance or inspection. Otherwise, damage or injury may be caused.
- ◎Modification to the AC Drive without permission is strictly prohibited, otherwise, severe injury may be caused. Arbitrarily modification of AC Drive will result in service warranty invalid.

2 Product information

2.1 Technical specifications

Input Frequency (Hz)	0-50/60 Hz fluctuation range :±5%
Output Voltage	AC 0~Input Voltage
Output Frequency	0 to 1000Hz
Control Mode	V/F Control
Overload Ability	120% Rated Current: 1 min; 150% Rated Current: 10 secs
Protection Level	IP20
Altitude	Normal use below 1000m, derating 1% for every 100m rise above 1000m, up to 3000m
Ambient Temperature	-10℃ ~ +50℃ (IF the ambient temperature is between 40℃ and 50℃, please use with derating)
Humidity	<95%RH ,no condensation
Shock	<5.9m/s ² (0.6g)
Storage Temperature	-25℃ ~ 60℃

Table 2-1 Technical specifications

2.2 Product nameplate

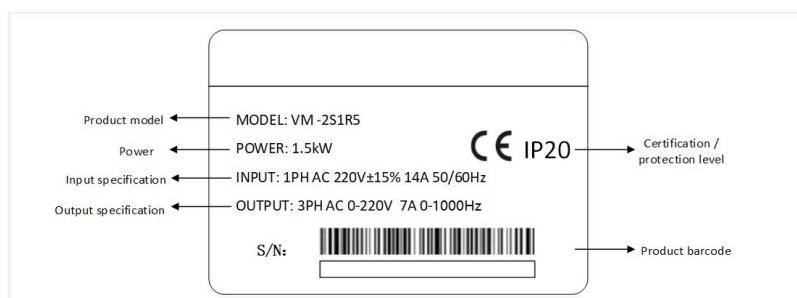


Figure 2-1 Product nameplate

2.3 Model description

VM – 2 S 1R5
 ① ② ③ ④

Field	No.	Identification	Description
Product series	①	Product series	VM series
Voltage grade	②	Voltage grade	2: 220VAC; 4: 380VAC
The input power	③	Power phase identification	S: single; T: three-phase
Rated power	④	Power range	1R5-1.5kW, R is the decimal point

Table 2-2 VM series model field commen

2.4 Product model

Model	Rated Power(kW)	Input Voltage	Rated Output Current(A)
VM-2SR75	0.75	Single Phase AC 220V±15%	4
VM-2S1R5	1.5		7
VM-2S2R2	2.2		9.6
VM-4TR75	0.75	3 Phase AC 380V±15%	2.5
VM-4T1R5	1.5		3.8
VM-4T2R2	2.2		5.1
VM-4T004	4		9
VM-4T5R5	5.5		13
VM-4T7R5	7.5		17

Table 2-3 Product model table

3Chapter 2 Installation

3.1 Overall structural drawing(unit: mm)

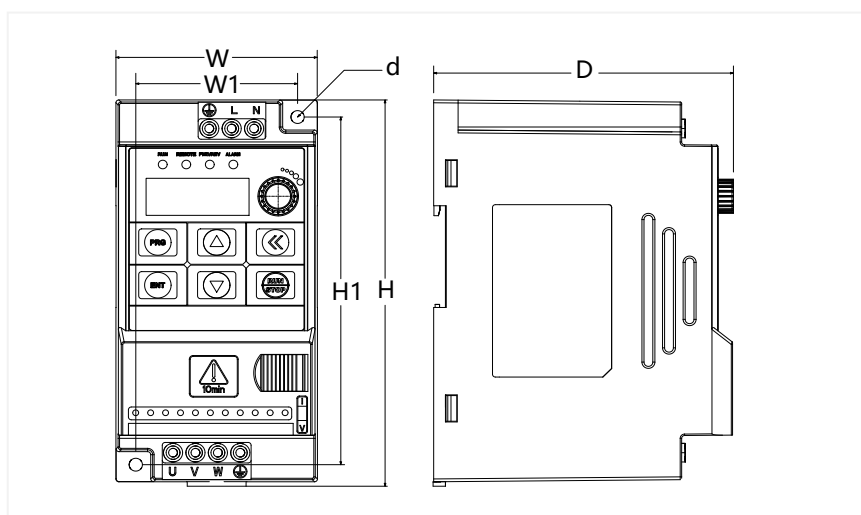


Figure 3-1 Outline dimension diagram

Model	Outer Dimension			Installation Dimension		Hole d
	H	W	D	H1	W1	
VM-2SR75	142	72	116	130	59	5
VM-2S1R5						
VM-2S2R2						
VM-4TR75						
VM-4T1R5						
VM-4T2R2						
VM-4T004	196	95	132	179	79	5.5
VM-4T5R5	225	115	154	208	99	5.5
VM-4T7R5						

Table 3-1 Outline dimension

3.2 Terminal connection

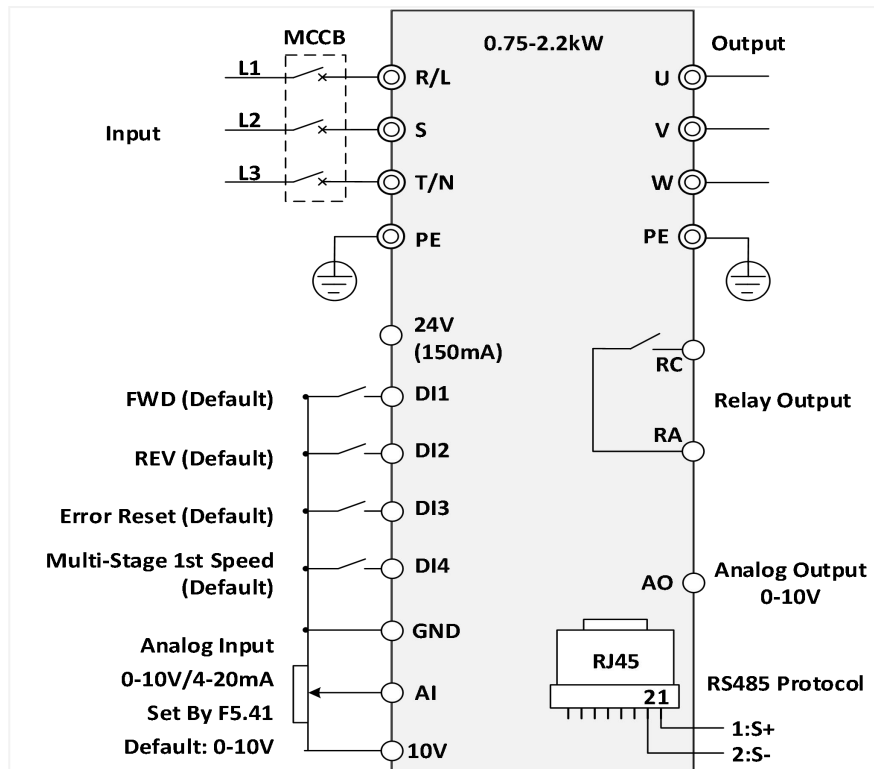


Figure 3-2 Terminal connection

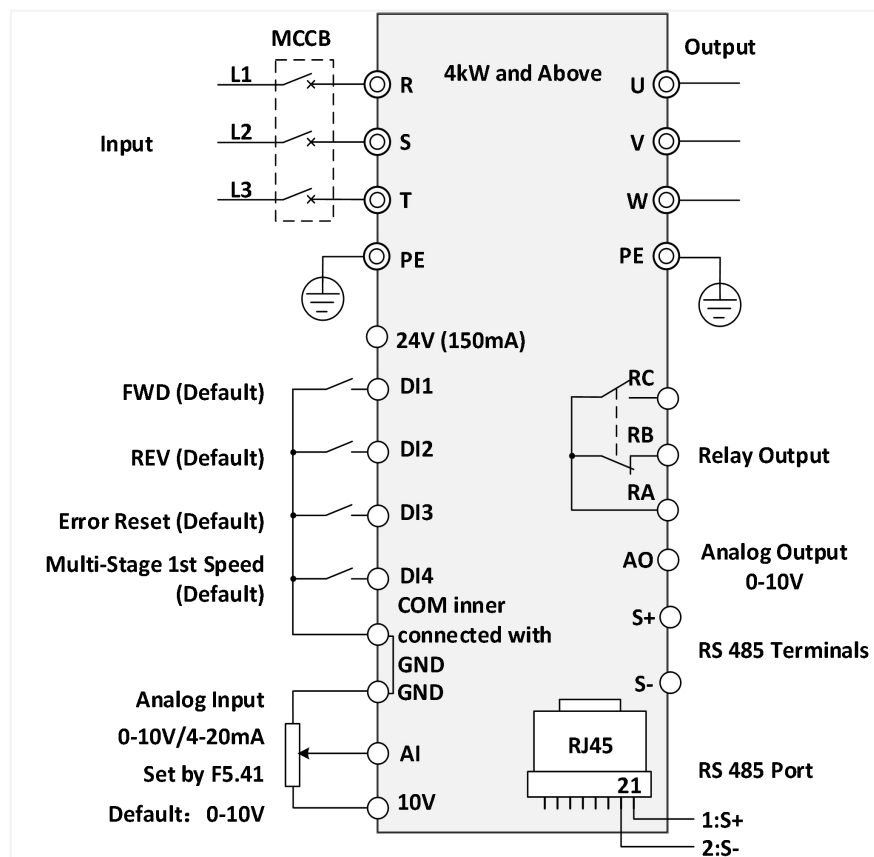


Figure 3-3 Terminal connectio

3.3 Main circuit connection


Terminal	Name	Description
R/L、S、T/N	Input Power	Connected to input power
U、V、W	Output Power	Connected to motor
	Grounding	Connected to ground
10V/GND	10V Power	Maximum Current: 20mA
24V/COM	24V Power	Maximum Current: 150mA
AI/GND	Analog Input	DC 0V ~ 10V or 0/4-20mA,set by parameter F5.41
AO/GND	Analog Output	0-10V
DI1/DI2 DI3/DI4	Digital Input	External digital signal input
RA/RB/RC	Relay Output	RA/RC NO,RA/RB NC
S+/S-	RS485 Communication	S+: Positive terminal of differential signal S-: Negative terminal of differential signal
RJ45 Port		As shown in the figure above; pin 1 is connected to S+, and pin 2 is connected to S-

Table 3-2 Main circuit terminals and function

4 Display and operation

4.1 Keypad

You can modify the parameters, monitor the working status and start or stop the AC Drive by operating the keypad, as shown in the following figure.

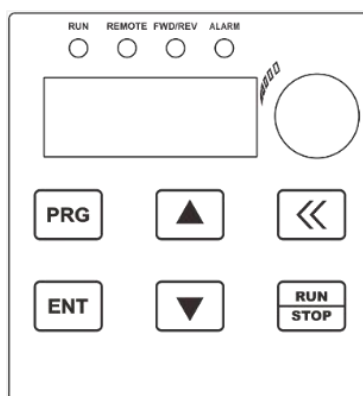


Figure 4-1 Keypad diagram

4.2 Keypad Operation

Item	Name	Function
Indicators	LED Indicators	RUN: On/Running,Off/Stopped REMOTE: On/Terminal Control,Off/Keypad Control,Blink/Communication Control FWD/REV: On/FWD,Off/REV,Blink/ FWD & REV Switching ALARM: Blink/Error,Off/Normal
Button	PRG	Enter or exit parameter setting
	ENT	Enter the parameters step by step、 save parameter
	△	Increase parameter or its value
	▽	Decrease parameter or its value
	>>	During parameter setting, select the modification bit of the parameter During stop/run monitoring, the display parameters can be selected cyclically
	RUN/STOP	In keypad operation mode, control run and stop It can be used for error reset when the drive alarms
Potentiometer	Speed Adjusting Potentiometer	Can be used for speed(frequency)adjusting

Table 4-1 Description of Indicators and key

5 Parameter function

“○” indicates that the set value of this parameter can be changed when the VFD is in stop or running state.

“●” indicates that the set value of this parameter cannot be changed when the VFD is running.

“◎” indicates that the value of this parameter is the actual detection record value and cannot be changed.

5.1 Functional parameters

Code	Name	Range	Default	Feature	RAM Address
F0.00	Industrial marco	0: Default 1~8: Reserved 9: Tile press machine application macro	0	●	0000
F0.01	Start/Stop chanel	0: Keypad 1: DI Terminal 2: RS485 Communication	0	●	0001
F0.02	UP/DOWN standard	Reserved	1	●	0002
F0.03	Main Frequency Source X option	0: F0.08 1: Keypad Potentiometer 2: AI1 3: Reserved 4: DI Terminal UP/DW 5: Reserved 6: Multi-Stage Speed 7: Inner Simple PLC 8: PID Control 9: RS485 Communication(Including External Keypad)	1	●	0003
F0.04	Auxiliary Frequency Source Y option	Same as F0.03	0	●	0004
F0.05	Range of Auxiliary Frequency Source Y	0: Relative to F0.10 1: Relative to Main Frequency Source X (F0.03)	0	○	0005
F0.06	Percentage Range of Auxiliary Frequency Source Y	0% to 150%	100%	○	0006

Code	Name	Range	Default	Feature	RAM Address
F0.07	Combination Option of F0.03 & F0.04	<p>LED Ones Place: Frequency Source Selection</p> <p>0: Main Frequency Source</p> <p>1: Main and Auxiliary Operation Results</p> <p>2: Switchover between Main and Auxiliary</p> <p>3: Switchover between X and Main (X) & Auxiliary (Y) Operation</p> <p>4: Switchover between Y and Main (X) & Auxiliary (Y) Operation</p> <p>LED Tens Place: Combination Operation</p> <p>0: Main + Auxiliary</p> <p>1: Main — Auxiliary</p> <p>2: MAX {Main, Auxiliary}</p> <p>3: MIN {Main, Auxiliary}</p> <p>4: Main * Auxiliary</p> <p>LED hundreds Place: Frequency Control direction selection</p> <p>0: Frequency control direction is invalid</p> <p>1: Frequency control direction is valid</p>	0	○	0007
F0.08	Keypad Setting Frequency	0.00 to F0.12	50.00Hz	○	0008
F0.09	Running Direction	<p>0: FWD</p> <p>1: REV</p> <p>2: REV Forbidden</p>	0	○	0009
F0.10	Maximum Output Frequency	0.00 to 320.00Hz	50.00Hz	●	000A
F0.11	Upper Limit Frequency Source	<p>0: F0.12</p> <p>1: AI1</p> <p>2: Reserved</p> <p>3: Reserved</p> <p>4: Reserved</p> <p>5: RS485 Communication</p> <p>6: Reserved</p> <p>7: Keypad Potentiometer</p>	0	●	000B
F0.12	Maximum Running Frequency	F0.14 to F0.10	50.00Hz	○	000C

Code	Name	Range	Default	Feature	RAM Address
F0.13	Reserved	Reserved	0.00Hz	○	000D
F0.14	Lower Limit Frequency	0.00 to F0.12	0.00Hz	○	000E
F0.15	The Function of Frequency Lower Limit	0: Stop 1: Run at Lower Limit Frequency 2: Run at 0 Speed	1	○	000F
F0.16	Carrier Frequency	0.6 to 15.0kHz	Due to VFD Model	●	0010
F0.17	Carrier PWM wave characteristics selection	LED Ones Place: 0: Independent of temperature 1: Related to temperature, >75, 1.0 Khz LED Tens Place: 0: Independent of the output frequency 1: Related to the output frequency LED Hundreds Place: random PWM depth 0: Invalid 1-8: , adjust depth LED Thousands Place: over modulation option 0: Invalid 1: Valid	1001	●	0011
F0.18	Acceleration Time 1	0.01 to 650.00s	Due to VFD Model	○	0012
F0.19	Deceleration Time 1	0.01 to 650.00s	Due to VFD Model	○	0013
F0.20	Default Setting Restoring	0: No Option 1: Recover Default Settings (Except F2 Team) 2: Clear All Error Records 3: Recover Default Settings (Including F2 Team)	0	●	0014
F0.21	Parameter Lock	0: Invalid (Unlock) 1: Valid(Lock)	0	○	0015
F0.23	Unit of Acceleration & Deceleration Time	0: 1Sec 1: 0.1Sec 2: 0.01Sec	2	●	0017

Code	Name	Range	Default	Feature	RAM Address
F0.24	Acceleration And Deceleration Time Reference Frequency	0: F0.10 1: F0.08 2: 100Hz	0	●	0018
F0.25	Fan Control Option	Ones Place : Run/Stop Option 0: Fan runs when VFD is powered on 1: Stop according to VFD temperature, run when VFD is running 2: Run according to VFD temperature, stop when VFD is stopped	01	○	0019
F0.26	Frequency Command Decimal Point	1:One Decimal Place 2:Two Decimal Place	2	●	001A
F1.00	Start Option	Ones Place: Start Option 0: Run according to starting 1: DC braking first and then star from the starting frequency 2: Speed tracking and direction judgment before starting from the starting frequency Tens Place: Speed Tracking Direction 0: Same as stopping direction 1: Same as starting direction 2: Automatic tracking	0	●	0100
F1.01	Reserved		0	●	0101
F1.02	Speed Tracking Period	0.01 to 60.00s	0.50s	○	0102
F1.03	Starting Frequency	0.00 to 60.00Hz	0.50Hz	○	0103
F1.04	Last Period of Starting Frequency	0.0 to 50.0s	0.0s	●	0104
F1.05	Braking Current of Starting	0.0 to 150.0%	60.0%	●	0105
F1.06	Braking Period before Starting	0.0 to 60.0s	1.0s	●	0106
F1.07	Acceleration & Deceleration Curve	0: Straight Line 1: S Curve	00	●	0107
F1.08	S-Curve Starting Acceleration Speed	20.0% to 100.0%	50.0%	●	0108
F1.09	S-Curve Starting Deceleration Speed	20.0% to 100.0%	50.0%	●	0109

Code	Name	Range	Default	Feature	RAM Address
F1.10	Stopping Option	0: Deceleration Stopping 1: Free Stopping(Or Coast to stop, means VFD cuts off its output power immediately when being stopped, leaving the motor and its load to stop totally due to their inertia)	0	○	010A
F1.11	DC Braking Beginning Frequency	0.00 to 50.00Hz	1.00Hz	○	010B
F1.12	DC Braking Delay	0.0 to 60.0s	0.0s	○	010D
F1.13	DC Braking Current	0.0 to 150.0%	60.0%	○	010C
F1.14	DC Braking Period	0.0 to 60.0s	0.0s	○	010E
F1.15	Stopping Frequency	0.00 to 60.00Hz	0.50Hz	○	010F
F1.16	Zero Speed Holding Torque Valid Period	0.0 to 6000.0sec When it is set to 6000.0s, it will be kept valid all the time	0	●	0110
F1.17	Zero Speed Holding Torque	0.0 to 150.0%	Due to VFD Model	●	0111
F2.00	Type of Motor	0: 3 Phase Asynchronous Motor (AM) 1: Permanent Magnet Synchronous Motor (PMSM) 2: Single Phase Asynchronous Motor(Can only be used with V/F mode)	0	●	0200
F2.01	Motor Rated Power	0.4 to 1000.0kW	Due to VFD Model	●	0201
F2.02	Motor Rated Voltage	0 to 440V	Due to VFD Model	●	0202
F2.03	Motor Rated Current	0.1 to 2000.0A	Due to VFD Model		0203
F2.04	Motor Rated Frequency	0.01 to F0.10	Due to VFD Model	●	0204
F2.05	Motor Rated RPM	0 to 65000rpm	Due to VFD Model	●	0205
F2.06	Motor Stator Resistance	0.001 to 65.000	Due to VFD Model	●	0206
F2.07	Motor Rotor Resistance	0.001 to 65.000	Due to VFD Model	●	0207
F2.08	Motor Stator and Rotor Leakage Inductance	0.1 to 6500.0mH	Due to VFD Model	●	0208

Code	Name	Range	Default	Feature	RAM Address
F2.09	Motor Stator and Rotor Mutual Inductance	0.1 to 6500.0mH	Due to VFD Model	●	0209
F2.10	Motor No-load Current	0.1 to 650.0A	Due to VFD Model	●	020A
F2.11	Motor Auto Tuning Option	0: No Option 1: Full-Tuning(Recommended when motor can be fully removed off its load) 2: Quiet-Tuning (Recommended when motor can't be fully removed off its load)	0	●	020B
F2.12	G/P Model	0: G Model (for constant torque load) 1: P Model (for quadratic torque load)	0	◎	020C
F2.13	Turn Ratio of Main and Auxiliary Coils of Single-Phase Asynchronous Motor	10 - 200%	80%	●	020D
F2.14	Single-Phase Motor Current Calibration Factor	50 - 200%	120%	●	020E
F3.00	ASR (Speed loop) proportional gain 1	0.00 to 1.00	0.20	○	0x0300
F3.01	ASR (Velocity ring) integration time 1	0.01 to 10.00s	0.10	○	0x0301
F3.02	Loss of velocity protection value	0 to 5000ms	0ms	○	0x0302
F3.03	ASR filtering time 1	0.000 to 0.100s	0.005s	○	0x0303
F3.04	ASR switching frequency 1	0.00 to 50.00Hz	5.00Hz	○	0x0304
F3.05	ASR (Speed loop) proportional gain 2	0.00 to 1.00	0.20	○	0x0305
F3.06	ASR (Velocity loop) integration time 2	0.01 to 10.00s	0.10	○	0x0306
F3.07	Reserve				0x0307
F3.08	ASR filtering time 2	0.000 to 0.100s	0.005s	○	0x0308
F3.09	ASR switching frequency 2	0.00 to 50.00Hz	10.00Hz	○	0x0309
F3.10	Slip compensation coefficient	0 to 250%	100%	○	0x030A

Code	Name	Range	Default	Feature	RAM Address
F3.11	Maximum output torque	0.0 to 250.0%	150.0%	○	0x030B
F3.12	Reserve		-	○	0x030C
F3.13	Reserve		-	○	0x030D
F3.14	Reserve		-	○	0x030E
F3.15	Reserve		-	○	0x030F
F3.16	Current loop D axis proportional gain	0.1 to 10.0	1.0	○	0x0310
F3.17	Current loop D axis integral gain	0.1 to 10.0	1.0	○	0x0311
F3.18	Current loop Q axis proportional gain	0.1 to 10.0	1.0	○	0x0312
F3.19	Current loop Q axis integral gain	0.1 to 10.0	1.0	○	0x0313
F3.20	D-axis feed-forward gain	0.0 to 200.0%	50.0%	○	0x0314
F3.21	Q-axis feed-forward gain	0.0 to 200.0%	50.0%	○	0x0315
F3.22	Optimize the current loop bandwidth	0.0 to 99.99ms	2.00ms	○	0x0316
F3.23	Current loop control word	bit0: Invalid 0:AM-ACR;1:PMACR bit1: 0:old csr;1:new csr bit2: 0: Enable prediction; 1: Disable prediction; bit3: 0:old week; 1:new week bit4: AM current loop PI feedback enable	0	○	0x0317
F3.24	Weak magnetic control current upper limit	0 to 200%	80%	○	0x0318
F3.25	Weak magnetic control feed forward gain	0 to 500%	100%	○	0x0319
F3.26	Weak magnetic control proportional gain	0 to 9999	500	○	0x031A
F3.27	Weak magnetic control integral gain	0 to 9999	1000	○	0x031B
F3.28	MTPA gain	0.0 to 500.0%	0.0%	○	0x031C
F3.29	MTPAI filtering time	0.0 to 999.9ms	100.0ms	○	0x031D
F3.30	Magnetic flux	0 to 500%	100%	○	0x031E

Code	Name	Range	Default	Feature	RAM Address
	compensation coefficient				
F3.31	Open-loop vector observation gain	0 to 9999	1024		0x031F
F3.32	Open-loop vector observation filtering time	1 to 100ms	10ms		0x0320
F3.33	Open-loop vector compensation start frequency	0 to 100.0%	1.0%		0x0321
F3.34	Open-loop vector control word	bit0: Invalid 0:AM-ACR; 1:PMACR bit1: 0:old csr;1:new csr bit2: 0:Enable prediction; 1:Disable prediction; bit3: Emf compensation enable bit4: Emf compensation integral	8		0x0322
F3.35	Synchronous open-loop starting mode	0: Direct start; 1: Angle search start;	1		0x0323
F3.36	Synchronous open-loop vector low-frequency boost	0 to 100.0%	50.0%	○	0x0324
F3.37	Synchronous open loop vector high-frequency boost	0.0 to 100.0%	5.0%	○	0x0325
F3.38	Low-frequency boost hold frequency	0.0 to 100.0%	10.00%	○	0x0326
F3.39	Low-frequency boost cutoff frequency	0.0 to 100.0%	20.00%	○	0x0327
F3.40	High-frequency injection voltage frequency	0 to 2000Hz	1000Hz	○	0x0328
F3.41	High-frequency injection voltage	1 to 2000 (4096 corresponding to the rated voltage of the motor)	1000	○	0x0329
F3.42	Phase-locked loop P	0 to 500.00	50.00	●	0x032A

Code	Name	Range	Default	Feature	RAM Address
F3.43	Phase-locked loop I	0 to 500.00	40.00	○	0x032B
F3.44	High-frequency injection control word	bit0: Enable high-frequency injection bit1: Use high-frequency injection angle at low frequency bit2: High-frequency filter depth	0/3	○	0x032C
F4.00	Linear VF Curve Selection	0: Linear Curve ; 1-9: 1.1-1.9 power VF curve respectively; 10: Squared VF Curve; 11: Customized VF curve;	0	●	0400
F4.01	Manual Torque Boost	0.1 to 30.0%, 0 = Auto Boost	Due to VFD Model	○	0401
F4.02	Torque Boost Cut-Off Frequency	0.0 to 100.0%	100.0%	●	0402
F4.03	Customized VF Point 1 Frequency	0.00 to F0.10	3.00Hz	●	0403
F4.04	Customized VF Point 1 Voltage	0.0 to 100.0%	10.0%	●	0404
F4.05	Customized VF Point 2 Frequency	0.00 to F0.10	5.00Hz	●	0405
F4.06	Customized VF Point 2 Voltage	0.0 to 100.0%	15.0%	●	0406
F4.07	Customized VF Point 3 Frequency	0.00 to F0.10	8.00Hz	●	0407
F4.08	Customized VF Point 3 Voltage	0.0 to 100.0%	22.0%	●	0408
F4.09	Customized VF Point 4 Frequency	0.00 to F0.10	12.00Hz	●	0408
F4.10	Customized VF Point 4 Voltage	0.0 to 100.0%	31.0%	●	040A
F4.11	Oscillation Suppression Gain	0.0 - 10.0	5.0	○	041B
F4.12	Oscillation Suppression Filter Period	1 - 1000ms	50ms	○	040C
F4.16	Auto Voltage Regular Function(AVR)	0: Invalid 1: Valid	0	○	0410
F5.00	DI1 Function Option	0: No function 1: Forward running (FWD) 2: Reverse running (REV) 3: Three-wire operation	1	●	0500
F5.01	DI2 Function Option		2	●	0501
F5.02	DI3 Function Option		9	●	0502
F5.03	DI4 Function Option		12	●	0503

Code	Name	Range	Default	Feature	RAM Address
F5.10	VDI Function Option	control 4: Forward point movement (FJOG) 5: Reverse point movement (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free stopping 9: Reset 10: Run pause 11: External faults often open input 12: Multi-stage speed instruction terminal 1 13: Multi-stage speed instruction terminal 2 14: Multi-speed instruction terminal 3 15: Multi-speed instruction terminal 4 16: Terminal 1 for acceleration/deceleration time selection 17: Terminal 2 for acceleration/deceleration time selection 18: Frequency source switchover (terminal and keypad) 19: UP/DOWN setting clear 20: Command source switchover terminal 1 21: Acceleration/deceleration prohibited 22: PID pause 23: Inner PLC status reset 32: Immediate DC braking 35: Reverse PID action direction 36: External stop terminal 1 37: Command source switchover terminal 1 43: PID parameter switchover terminal	0	●	050A

Code	Name	Range	Default	Feature	RAM Address
		44: User-defined fault 1 45: User-defined fault 2 47: Emergent Stop 49: Deceleration dc braking 50: Clear the current running time			
F5.15	DI Terminal Filter Time	0.000 to 60.000s	0.010s	○	050F
F5.16	Terminal Control Running Mode	0: 2-wire mode 1 1: 2-wire mode 2 2: 3-wire mode 1 3: 3-wire mode 2	0	●	0510
F5.17	UP/DW Control Frequency Increase and Decrease Rate	0.01 to 50.00Hz/s	0.50Hz/s	○	0511
F5.18	AI1 Input Lower Limit	0.00 to 10.00V	0.00V	○	0512
F5.19	AI1 Input Lower Limit Relative Frequency Percentage	0.00 to 100.00%	0.00%	○	0513
F5.20	AI1 Input Upper Limit	0.00 to 10.00V	10.00V	○	0514
F5.21	AI1 Input Upper Limit Relative Frequency Percentage	0.00 to 100.00%	100.00%	○	0515
F5.22	AI1 Filter Time	0.00-10.00sec	0. 10sec	○	0516
F5.33	DI1 Rising Edge Delay	0.0 to 360.0s	0	○	0521
F5.34	DI2 Falling Edge Delay	0.0 to 360.0s	0	○	0522
F5.35	DI2 Rising Edge Delay	0.0 to 360.0s	0	○	0523
F5.36	DI2 Falling Edge Delay	0.0 to 360.0s	0	○	0524
F5.37	DI1-DI4 Terminal Feature Option	0: Closed valid 1: Disconnect valid LED Ones Place: DI1 LED Tens Place: DI2 LED Hundreds Place: DI3 LED Thousands Place: DI4	0000	●	0525
F5.41	Analog Input Signal Option	Ones Place: AI1 Tens Place: Reserved 0: Voltage 1: Current	000	●	0529
F5.42	Analog Input Curve Option	Ones Place: AI1 Tens Place: Reserved 0: Linear 1: Curve	000	●	052A

Code	Name	Range	Default	Feature	RAM Address
F5.60	Terminal Operation Option	LED Ones Place: Recover Mode after Free Stop 0: Restore the original command after signal off 1: Not restore the original command after signal off LED Tens Place: Recover Mode after Emergent Stop 0: Restore the original command after signal off 1: Not restore the original command after signal off LED Hundreds Place: Working Mode after Error Reset 0: Can start to run directly 1: Must stop first and then run Thousands Place: Reserved	0110	●	050E
F6.00	Reserved	Reserved	0	○	0600
F6.02	Relay Output Option	0: No option	2	○	0602
F6.06	Virtual VDO Output Option	1: VFD running 2: Alarm (Error) 3: Frequency level detection FDT1 output 4: Set frequency reached 5: VFD running at 0Hz 11: Inner PLC cycle completed 15: VFD ready for running 17: Frequency upper limit reached 18: Frequency lower limit reached 19: VFD input voltage too low 25: Frequency level detection FDT2 output 40: Running time reached 41: User-defined output 1 42: User-defined output 2 45: VFD running REV	0	●	0606
F6.11	Reserved	0: Set Frequency 1: Running Frequency 2: Output Current	0	○	060B

Code	Name	Range	Default	Feature	RAM Address
F6.12	AO1 Output Option	3: Input Voltage 4: Output Voltage 5: RPM 6: Reserved	0	○	060C
F6.13	Reserved	7: Reserved 8: PID Set Value 9: PID Feedback Value 10: Output Power 11: Bus Voltage 12: Reserved 13: AI Input Value 14: Reserved 15: Reserved 16: IGBT Temperature 1 17: IGBT Temperature 2	0	○	060D
F6.15	AO1 Output Signal Offset	-10.0 to 10.0%	0.0%	○	060F
F6.16	AO1 Output Signal Gain	25.0 to 200.0%	100.0%	●	0610
F6.20	Relay 1 Output Delay	0.0 to 360.0s	0	○	0614
F6.22	Reserved	Reserved	0	○	0616
F6.24	Relay 1 Off Delay	0.0 to 360.0s	0	○	0618
F6.27	Relay output effective level	0: Positive logic 1: Negative logic Ones Place: Y Tens Place: RELAY1 Hundreds Place: RELAY2 Thousands Place: vY1	0	○	061B
F6.28	User Defined Output Option(EX)1	0: Running frequency 1: Set frequency 2: Bus Voltage 3: Output Voltage 4: Output Current 5: Output Power 6: Output Torque 7-8: Reserved 9: AI1 Input 10: Reserved	0	○	061C

Code	Name	Range	Default	Feature	RAM Address
F6.29	User Defined Comparison Option 1	<p>Ones Place: Comparison Option</p> <p>0: EX == X1(F6.31)</p> <p>1: EX ≥ X1</p> <p>2: EX ≤ X1</p> <p>3: X1 ≤ EX ≤ X2</p> <p>4: EX & X1=X2</p> <p>Tens Place: Output Option</p> <p>0: False Output</p> <p>1: Truth Output</p>	0	○	061D
F6.30	User Defined Dead Zone 1	0 to 65535	0	○	061E
F6.31	User Defined Output Option 1 Comparison 1	0 to 65535	0	○	061F
F6.32	User Defined Output Option 1 Comparison 2	0 to 65535	0	○	0620
F6.33	User Defined Output Option(EX)2	Same as F6.28	0	○	0621
F6.34	User Defined Comparison Option 2	Same as F6.29	0	○	0622
F6.35	User Defined Dead Zone 2	0 to 65535	0	○	0623
F6.36	User Defined Output Option 2 Comparison 1	0 to 65535	0	○	0624
F6.37	User Defined Output Option 2 Comparison 2	0 to 65535	0	○	0625
F7.00	Parameters Copy Option	<p>0: No Option</p> <p>1: Download Parameters from Keypad to VFD</p> <p>2: Upload Parameters from VFD to Keypad</p>	0	○	0700
F7.02	Keypad Stop Button Priority Option	<p>LED Ones Place: Priority at Terminal Control Mode(F0.01=1)</p> <p>0: Invalid</p> <p>1: Valid</p> <p>LED Tens Place: Priority at Communication Control Mode (F0.01=2)</p> <p>0: Invalid</p> <p>1: Valid</p> <p>LED Hundreds Place: Reserved</p> <p>LED Thousands Place: Reserved</p>	0	○	0702

Code	Name	Range	Default	Feature	RAM Address
F7.03	Keypad Display Value 1(Running Status)	LED Ones Place: 1st Display Value 0: Running frequency 1: Set frequency 2: Bus Voltage 3: Output Voltage 4: Output Current 5: Output Power 6: Output Torque 7: DI Status 8: DO Status 9: AI1 Input A: Reserved B: Reserved C: Reserved D: Reserved E: Motor RPM F: PID Set Value LED Tens Place: 2nd Display Value LED Hundreds Place: 3rd Display Value LED Thousands Place: 4th Display Value	3420	○	0703

Code	Name	Range	Default	Feature	RAM Address
F7.04	Keypad Display Value 2 (Running Status)	LED Ones Place: 1st Display Value 0: PID Feedback Value 1: PLC Stage 2: Reserved 3: Feedback Speed 4: Reserved 5: Reserved 6: Reserved 7: Reserved 8: Reserved 9: Currently Power-on Period A: Currently Running Period B: Reserved C: Reserved D: Reserved E: Main Frequency Source X F: Auxiliary Frequency Source Y LED Tens Place: 2nd Display Value LED Hundreds Place: 3rd Display Value LED Thousands Place: 4th Display Value	0	○	0704
F7.05	Keypad Display Value 1 (Stop Status)	Same as F7.03	3421	○	0705
F7.06	RPM Display Coefficient	0.0 to 5000.0%	100.0%	○	0706
F7.07	IGBT Temperature	0 to 100	-	⊙	0707
F7.08	Rectifier Temperature	0 to 100	-	⊙	0708
F7.09	Accumulated Running Time	0 to 65535h	-	⊙	0709
F7.10	Product Item Number	-	-	⊙	070A
F7.11	Software Version	-	-	⊙	070B
F7.12	Reserved			○	070C
F7.13	Accumulated Power-on Time	0 to 65535h	-	⊙	070D
F7.14	Accumulated Power Consumption		-	⊙	070E
F8.00	Set Frequency of Jog Run	0.00 to F0.10	5.00Hz	○	0800

Code	Name	Range	Default	Feature	RAM Address
F8.01	Jog Run Acceleration Time	0.01 to 650.00s	10.00s	○	0801
F8.02	Jog Run Deceleration Time	0.01 to 650.00s	10.00s	○	0802
F8.03	Acceleration Time 2	0.01 to 650.00s	10.00s	○	0803
F8.04	Deceleration Time 2	0.01 to 650.00s	10.00s	○	0804
F8.05	Acceleration Time 3	0.01 to 650.00s	10.00s	○	0805
F8.06	Deceleration Time 3	0.01 to 650.00s	10.00s	○	0806
F8.07	Acceleration Time 4	0.01 to 650.00s	10.00s	○	0807
F8.08	Deceleration Time 4	0.01 to 650.00s	10.00s	○	0808
F8.09	Deceleration Time of Emergent Stop	0.01 to 650.00s	10.00s	○	0809
F8.10	Hopping Frequency Point	0.00 to F0.10	0.00Hz	○	080A
F8.11	Hopping Range	0.00 to F0.10	0.00Hz	○	080B
F8.12	Dead Zone Time for Forward and Reverse Switching	0.0 to 120.0s	0.0s	○	080C
F8.13	Set Value of Running Period	0 to 65000min	0min	○	080D
F8.14	Option for Set Value of Running Period	0: Keep Running 1: Alarm	0	○	080E
F8.15	Terminal Jog Run Priority	0: Invalid 1: Valid	1	○	080F
F8.16	PID Preset Switching Condition Option	0: Due to Time 1: Due to Deviation	0	○	0810
F8.17	PID Preset Switching Range	0.0-100.0%	3.0%	○	0811
F9.00	PID Set Value Source	0: F9.02 1: Reserved 2: AI1 3: Reserved 4: Reserved 5: RS485 Communication 6: Reserved	0	○	0900
F9.01	PID Set Value	0.00 to 100.0%	50.0%	○	0901
F9.02	PID Feedback Value Source	0: Reserved 1: Reserved 2: AI1 3: Reserved 4: Reserved 5: Reserved 6: RS485 Communication	2	○	0902

Code	Name	Range	Default	Feature	RAM Address
F9.03	PID Control Option	LED Ones Place: PID Control Feature 0: Positive 1: Negative LED Tens Place: PID Control Option 0: REV Forbidden 1: REV Permit LED Hundreds Place: Alignment selection 0: Non-center alignment 1: center aligned Thousands Place: Reserved	0100	○	0903
F9.04	Feedback Signal Maximum Range	0 to 100.0	100.0	○	0904
F9.05	Proportional Gain (P)	0.00 to 100.00	1.00	○	0905
F9.06	Integration Time (I)	0.00 to 10.00s	0.10s	○	0906
F9.07	Differential Gain (D)	0.00 to 10.00s	0.00s	○	0907
F9.08	REV Cutoff Frequency	0.0 to F0.10	0.00Hz	○	0908
F9.09	PID Control Deviation Limit	0.0 to 100.0%	0.0%	○	0909
F9.10	Differential Clipping	0.00 to 100.00%	0.10%	○	090A
F9.11	Reserved	Reserved	0.10s	○	090B
F9.12	PID Feedback Filter Time	0.00 to 100.00s	0.00s	○	090C
F9.13	PID Output Filter Time	0.00 to 60.00s	0.00s	○	090D
F9.14	Proportional Gain (P2)	0.00 to 100.00	1.00	○	090E
F9.15	Integration Time (I2)	0.00 to 10.00s	0.10s	○	090F
F9.16	Differential Gain (D2)	0.00 to 10.00s	0.00s	○	0910
F9.17	PID Switching Condition	0: Switching Forbidden 1: Switching with DI Input Signal 2: Automatic switching based on deviation	0	○	0911
F9.18	Switching Deviation 1	0.0 to F9.19	20.0%	○	0912
F9.19	Switching Deviation 2	F9.18 to 100.0%	80.0%	○	0913
F9.20	PID Preset Output	0.0 to 100.0%	100.0%	○	0914
F9.21	PID Preset Output Period	0.0 to 6500.0s	0.0s	○	0915
F9.22	Positive Maximum Value of Twice Output Deviation	0.00 to 100.00%	1.00%	○	0916
F9.23	Negative Maximum Value of Twice Output Deviation	0.00 to 100.00%	1.00%	○	0917

Code	Name	Range	Default	Feature	RAM Address
F9.24	Integral Property	Ones Place: Integral separation 0: Invalid 1: Valid Tens Place: When the output reaches the limit value, whether to stop the integration 0: Keep on integration 1: Stop integration	0	○	0918
F9.25	Feedback Offline Alarm Point	0.0 to 100.0%	0.0%	○	0919
F9.26	Feedback Offline Alarm Delay	0.0 to 120.0s	1.0s	○	091A
F9.27	Feedback Offline Alarm Option	0: Keep on PID running without alarming 1: Stop and alarm 2: Keep on PID running with alarming 3: Keep on running at present running frequency with alarming	0	○	091B
F9.28	PID Option	0: Normal PID 1: Sleepable PID	0	○	091C
F9.29	Sleep Threshold	0.0% to 100.0%	60.0%	○	091D
F9.30	Sleep Delay	0.0 to 3600.0s	3.0s	○	091E
F9.31	Wakeup Threshold	0.0% to 100.0%	20.0%	○	091F
F9.32	Wakeup Delay	0.0 to 3600.0s	3.0s	○	0920
F9.33	Minimum Output	0: F0.14 1: 0Hz	0	●	0921
FA.00	Motor Overload Protection Option	0: Invalid 1: Valid	1	○	0A00
FA.01	Motor Overload Protection Level	0.0 to 250.0%	100.0%	○	0A01
FA.02	Motor Overload Warning Level	20.0 to 250.0%	80.0%	○	0A02
FA.03	Frequency Limit	0.00Hz - 99.99Hz	0.00Hz	○	0A03
FA.04	Overvoltage Stall Protection Gain	0 - 500%	100%	○	0A04
FA.05	Overvoltage Stall Protection Point	110% - 150% * Motor Rated Voltage	135%	○	0A05
FA.06	Overvoltage Stall Protection Filter Time	1 - 1000ms	5ms	○	0A06
FA.07	Overcurrent Stall Protection Gain	0 - 500%	20%	○	0A07

Code	Name	Range	Default	Feature	RAM Address
FA.08	Overcurrent Stall Protection Point	100% - 200% * VFD Rated Current	150%	○	0A08
FA.09	Overcurrent Stall Protection Filter Time	1 - 1000ms	20ms	○	0A09
FA.10	Short-circuit to Ground Protection Option	0: Invalid 1: Valid	0	○	0A0A
FA.11	AC Input Phase Loss Protection Option	0: Invalid 1: Valid	1	○	0A0B
FA.12	AC Output Phase Loss Protection Option	0: Invalid 1: Valid	1	○	0A0C
FA.13	Phase Loss Software Detection Point	0.0 to 999.9%	15.0%	○	0A0D
FA.14	PWM parameter	Ones Place: PWM mode selection 0: PZV 1: 7 segments Tens Place: Enable Voltage Prediction Compensation Hundreds Place: 0: SSSU 1: DSDU Thousands Place: Random Carrier mode 0: Random Carrier 1: Random 0 Vector	0110	●	0A0E
FA.15	Hardware Current & Voltage Protection Option	Ones Place: Hardware Overcurrent Protection 0: Invalid, 1: Valid Tens Place: Hardware Overvoltage Protection 0: Invalid, 1: Valid Hundreds Place: Reserved Thousands Place: Reserved	1110	○	0A0F
FA.16	Hardware Overcurrent Protection Point	100 to 220% * VFD Rated Current	180%	○	0A10
FA.17	Hardware Overcurrent Protection Delay	1 to 5000ms	500ms	○	0A11
FA.18	Protection Point of Too Low Bus Voltage	40.0% to 100.0%	100%	○	0A12
FA.19	Protection Point of Overvoltage	120.0 - 200.0%	100%	○	0A13
FA.20	Auto Error Reset Times	0 to 5	0	○	0A14
FA.21	Auto Error Reset Interval	0.1 to 100.0s	1.0s	○	0A15
FA.23	Flux Brake Gain	0 - 500%	170%	○	0A16

Code	Name	Range	Default	Feature	RAM Address
FA.26	Output power Correction Factor	0 - 1000%	100%	○	0A1A
FA.27	Output Power Display Unit	0 – Percentage (%) 1 - kW	0	○	0A1B
FA.28	Speed Tracking Current Gain	0 to 100.00%	10%	○	0A1C
FA.29	Speed tracking gain	0 to 100.00%	5%	○	0A1D
FA.30	Speed tracking current	10 - 200%	60%	○	0A1E
FA.31	Software Current Protection Option	0: Invalid, 1: Valid	1	○	0A1F
FA.32	Software Current Protection Point	200%-300% * VFD Rated Current	270%	○	0A20
FC.00	RS485(Modbus)Communication Address	1 to 247	1	○	0C00
FC.01	Communication Baud Rate	0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps	3	○	0C01
FC.02	Modbus Data Format	0: (N,8,1) No parity, data bits: 8; stop bits: 1 1: (E,8,1) Even parity, data bits: 8; stop bits: 1 2: (O,8,1) Odd parity, data bits: 8; stop bits: 1 3: (N,8,2) No parity, data bits: 8; stop bits: 2	0	○	0C02
FC.03	Modbus Communication Reply Delay	0 to 500ms	1ms	○	0C03
FC.04	Modbus Communication Timeout Alarm Delay	0.1 to 100.0s	1.0s	○	0C04
FD.00	INNER PLC(AND MULTI-STAGE SPEED)0	0.0 to 100.0% * F0.10	0	○	0D00
FD.01	INNER PLC(AND MULTI-STAGE SPEED)1	0.0 to 100.0% * F0.10	0	○	0D01
FD.02	INNER PLC(AND MULTI-STAGE SPEED)2	0.0 to 100.0% * F0.10	0	○	0D02
FD.03	INNER PLC(AND MULTI-STAGE SPEED)3	0.0 to 100.0% * F0.10	0	○	0D03

Code	Name	Range	Default	Feature	RAM Address
FD.04	INNER PLC(AND MULTI-STAGE SPEED)4	0.0 to 100.0% * F0.10	0	○	0D04
FD.05	INNER PLC(AND MULTI-STAGE SPEED)5	0.0 to 100.0% * F0.10	0	○	0D05
FD.06	INNER PLC(AND MULTI-STAGE SPEED)6	0.0 to 100.0% * F0.10	0	○	0D06
FD.07	INNER PLC(AND MULTI-STAGE SPEED)7	0.0 to 100.0% * F0.10	0	○	0D07
FD.08	INNER PLC(AND MULTI-STAGE SPEED)8	0.0 to 100.0% * F0.10	0	○	0D08
FD.09	INNER PLC(AND MULTI-STAGE SPEED)9	0.0 to 100.0% * F0.10	0	○	0D09
FD.10	INNER PLC(AND MULTI-STAGE SPEED)10	0.0 to 100.0% * F0.10	0	○	0D0A
FD.11	INNER PLC(AND MULTI-STAGE SPEED)11	0.0 to 100.0% * F0.10	0	○	0D0B
FD.12	INNER PLC(AND MULTI-STAGE SPEED)12	0.0 to 100.0% * F0.10	0	○	0D0C
FD.13	INNER PLC(AND MULTI-STAGE SPEED)13	0.0 to 100.0% * F0.10	0	○	0D0D
FD.14	INNER PLC(AND MULTI-STAGE SPEED)14	0.0 to 100.0% * F0.10	0	○	0D0E
FD.15	INNER PLC(AND MULTI-STAGE SPEED)15	0.0 to 100.0% * F0.10	0	○	0D0F
FD.16	Inner PLC Running Mode	0: Stop after a single cycle 1: Continuous loop 2: Hold the final value after a single cycle	0	○	0D10
FD.17	Inner PLC Power-off Memory Option	0: Invalid, 1: Valid	0	○	0D11
FD.18	Inner PLC Stage 0 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D12

Code	Name	Range	Default	Feature	RAM Address
FD.19	Inner PLC Stage 0 Direction & Acceleration & Deceleration Time	LED Ones Place: Direction of the Stage 0: FWD, 1: REV LED Tens Place: Acceleration & Deceleration Time 0: Acceleration & Deceleration Time 1 1: Acceleration & Deceleration Time 2 2: Acceleration & Deceleration Time 3 3: Acceleration & Deceleration Time 4 LED Hundreds Place: Reserved LED Thousands Place: Reserved	0	○	0D13
FD.20	Inner PLC Stage 1 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D14
FD.21	Inner PLC Stage 1 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D15
FD.22	Inner PLC Stage 2 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D16
FD.23	Inner PLC Stage 2 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D17
FD.24	Inner PLC Stage 3 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D18
FD.25	Inner PLC Stage 3 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D19
FD.26	Inner PLC Stage 4 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D1A
FD.27	Inner PLC Stage 4 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D1B
FD.28	Inner PLC Stage 5 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D1C

Code	Name	Range	Default	Feature	RAM Address
FD.29	Inner PLC Stage 5 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D1D
FD.30	Inner PLC Stage 6 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D1E
FD.31	Inner PLC Stage 6 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D1F
FD.32	Inner PLC Stage 7 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D20
FD.33	Inner PLC Stage 7 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D21
FD.34	Inner PLC Stage 8 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D22
FD.35	Inner PLC Stage 8 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D23
FD.36	Inner PLC Stage 9 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D24
FD.37	Inner PLC Stage 9 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D25
FD.38	Inner PLC Stage 10 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D26
FD.39	Inner PLC Stage 10 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D27
FD.40	Inner PLC Stage 11 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D28
FD.41	Inner PLC Stage 11 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D29
FD.42	Inner PLC Stage 12 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D2A
FD.43	Inner PLC Stage 12 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D2B

Code	Name	Range	Default	Feature	RAM Address
FD.44	Inner PLC Stage 13 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D2C
FD.45	Inner PLC Stage 13 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D2D
FD.46	Inner PLC Stage 14 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D2E
FD.47	Inner PLC Stage 14 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D2F
FD.48	Inner PLC Stage 15 Running Period	0.0 to 6500.0(s/m/h)	10.0	○	0D30
FD.49	Inner PLC Stage 15 Direction & Acceleration & Deceleration Time	Same as FD.19	0	○	0D31
FD.50	Inner PLC Running Option	LED Tens Place : Time Unit 0: Sec 1: Min 2: H LED Thousands Place: Starting Option 0: Start from stage 1 1: Start from the stage when being stopped 2: Start with the rest period at the stage being stopped	0	○	0D32
FD.51	Multi-Stage Speed 0 Source	0: FD.00 1: AI1 2: Reserved 3: Keypad Potentiometer 4: Reserved 5: PID 6: Reserved	0	○	0D33
FD.52	Multi-Stage Speed Priority	0: Invalid 1: Valid	1	○	0D34
FE.00	Lock Option of Parameters and Buttons	0: Unlocked 1: Parameters Locked 2: Parameters & Keypad Buttons Locked (Except RUN/STOP/JOG) 3: Parameters & All Keypad Buttons Locked	0	○	0E00
FE.01	User Password	0 to 9999	0	○	0E01

Table 5-1 Functional parameter

5.2 Monitoring Parameters

Parameter	Name	Minimum Unit	Priority	Address
D0.00	Running Frequency(Hz)	0.01Hz	◎	D000
D0.01	Set Frequency(Hz)	0.01Hz	◎	D001
D0.02	Bus Voltage(V)	0.1V	◎	D002
D0.03	Output Voltage(V)	1V	◎	D003
D0.04	Output Current(A)	0.01A	◎	D004
D0.05	Output power (kW)	0.1kW	◎	D005
D0.06	Output torque (%)	0.1%	◎	D006
D0.07	DI Input Status	1	◎	D007
D0.08	DO Output Status	1	◎	D008
D0.09	AI Voltage(V)	0.01V	◎	D009
D0.10	Reserved	-	◎	D00A
D0.11	PLC Stage	-	◎	D00B
D0.12	IGBT Module Temperature(°C)	0.1°C	◎	D00C
D0.13	Count value	1	◎	D00D
D0.14	Load speed display	1	◎	D00E
D0.15	PID Set	1	◎	D00F
D0.16	PID FeedBback	1	◎	D010
D0.17	PLC Stage	1	◎	D011
D0.18	Reserved	-	◎	D012
D0.19	Feedback Speed(Unit0.1Hz)	0.1Hz	◎	D013
D0.20	Reserved	-	◎	D014
D0.21	Feedback Speed(Unit0.1Hz)	0.1Hz	◎	D015
D0.22	Reserved	-	◎	D016
D0.32	Reserved	-	◎	D017
D0.24	Reserved	-	◎	D018
D0.25	Current power-on time	1Min	◎	D019
D0.26	Current running time	0.1Min	◎	D01A
D0.27	Reserved	-	◎	D01B
D0.28	Communication setting	0.01%	◎	D01C
D0.29	Reserved	-	◎	D01D
D0.30	Main frequency X display	0.01Hz	◎	D01E
D0.31	Auxiliary frequency Y display	0.01Hz	◎	D01F

Table 5-2 Monitoring Parameters

5.3 Fault recording parameters

Function Code	Parameter Name	Setting Range	Property	Property
E0 GROUP THE LATEST FAULT RECORDS				
E0.00	The latest fault type	No faultOvercurrent during acceleration (Err02)Overcurrent during deceleration (Err03)Overcurrent at	◎	E000

Function Code	Parameter Name	Setting Range	Property	Property
		constant speed (Err04)Overvoltage during acceleration (Err05)Overvoltage during deceleration (Err06)Overvoltage at constant speed (Err07)Undervoltage (Err09)AC Drive overload (Err10)Motor overload (Err11)Output missing phase (Err13)Module overheating (Err14)External equipment fault (Err15)Current detection fault (Err18)Data overflow (Err21)On-power EEPROM check fault (Err22)Running time arrival (Err26)PID feedback loss during running(Err31)		
E0.01	Frequency by the latest failure	0.0Hz~F0.10 (Maximum frequency)	◎	E001
E0.02	Current by the latest failure	0.00~655.35	◎	E002
E0.03	Bus voltage by the latest failure	0.0~810.0	◎	E003
E0.04	Input terminal status by the latest failure	0-15	◎	E004
E0.05	The temperature of AC Drive by the latest failure	0~65535	◎	E005
E0.06	The temperature of IGBT Module by the latest failure	0~100℃	◎	E006
E0.07	Inverter Fault Status	LED Ones Place: Running Direction 0: FWD1: REVLED Tens Place: Running status0: Shutdown1: S tabilized speed2:	◎	E007

Function Code	Parameter Name	Setting Range	Property	Property
		Acceleration3: DecelerationLED Hundreds Place: ReservedThousands Place: Reserved		
E0.08	Time of latest failure (timing from this on-power time)	0~65535H	◎	E008
E0.09	Time of the latest failure (timing from the running beginning)	0~65535H	◎	E009
E0.10	Fault Output Voltage	0~1500V	◎	E00A
E0.12	Reserved	-	◎	E00B
E1 ~ EE GROUP THE LAST 14 FAULT RECORDS				

Table 5-4 Fault recording parameters

5.4 Main Error Codes and Solutions

Code	Description	Possible Causes	Solutions
ERR02	Overcurrent during acceleration	There is grounding or short circuit in the output circuit of the controller	Eliminate peripheral faults and check whether there is a short circuit at the motor end
		Acceleration time is set too short	Increase acceleration time
		The controller model is selected improperly(with too small power)	Select the controller that matches the motor power and load conditions
ERR03	Overcurrent during deceleration	There is grounding or short circuit in the output circuit of the controller	Eliminate peripheral faults and check whether there is a short circuit at the motor end
		Deceleration time is set too short	Increase deceleration time
ERR04	Overcurrent at constant speed	There is grounding or short circuit in the output circuit of the controller	Eliminate peripheral faults and check whether there is a short circuit at the motor end
		Controller model is too small	Select the controller that matches the motor power and load conditions
ERR05	Overvoltage during acceleration	Input voltage is too high	Adjust input voltage to a proper range
		Acceleration time is set too short	Increase acceleration time
		No braking unit and braking resistor installed	Install braking unit and braking resistor
ERR06	Overvoltage during deceleration	Input voltage is too high	Adjust input voltage to a proper range
		Deceleration time is set too short	Increase deceleration time

Code	Description	Possible Causes	Solutions
		No braking unit and braking resistor installed	Install braking unit and braking resistor
ERR07	Overvoltage at constant speed	Input voltage is too high	Adjust input voltage to a proper range
ERR08	Snubber resistor overload	The input voltage is not within the specified range	Adjust input voltage to a proper range
ERR09	Low input voltage	The input voltage is not within the specified range	Adjust input voltage to a proper range
		Abnormal bus voltage detection; abnormality of rectifier bridge, snubber resistor, drive board and control board	Seek for technical support
ERR10	VFD overload	Load is too large or motor is stuck	Reduce load and check motor and mechanical condition
		Controller model is too small	Select the controller that matches the motor power and load conditions
ERR11	Motor overload	The motor overload protection parameters (FA.01-FA.02) are not properly set	Correctly set them
		Load is too large or motor is stuck	Reduce load and check motor and mechanical condition
ERR12	Input phase loss	Abnormal three-phase input power	Check and troubleshoot existing problems in peripheral circuits
		Failure of drive board or control board	Seek for technical support
ERR13	Output phase loss	Motor failure	Check if the motor winding is open
		The wirings between controller and motor is abnormal	Troubleshoot peripherals
		When the motor is running, the three-phase output of the controller is unbalanced	Check whether the three-phase windings of the motor are normal and troubleshoot
		Failure of IGBT or drive board	Seek for technical support
ERR14	IGBT overheat	Ambient temperature is too high	Lower ambient temperature
		Air duct blocked	Clear air duct
		Fan failure	Replace the fan
		Failure of thermistor or IGBT	Seek for technical support
ERR15	External alarm input	Input external fault signal through DI terminal	Clear external fault signal
ERR18	Current detection failure	Abnormal current detection circuit	Seek for technical support
		Control board failure	Seek for technical support
ERR21	Parameter R/W	Control board failure	Seek for technical support

Code	Description	Possible Causes	Solutions
	failure		
ERR22	EEPROM failure	EEPROM chip failure	Seek for technical support

Table 5-4 Main Error Codes and Solutions

6 Communication Protocol

VM Series AC Drive provides RS485 communication interface and supports Modbus communication protocol. Users can achieve centralized control by computer or PLC, set AC Drive operation commands, modify or read function code parameters, read the working state and fault info of the AC Drive.

5.1 Communication Address Description

The communication address listed in the function code table is in the way of writing to RAM, and the data will not be saved after the VFD is powered off. During communication, for the write command "06H", if the parameters need to be stored in power-down, the way of writing to EEPROM should be used, and the original The "0" of the highest bit of the RAM address is changed to "F", and converted into the corresponding EEPROM address, such as: "0XXX" to "FXXX", address conversion example:

The upper limit frequency is F012, the communication address for writing RAM is: 000C, and the address corresponding to EEPROM is: F00C.

Acceleration time F018, the communication address for writing RAM is: 0012, and the address corresponding to EEPROM is: F012.

It should be noted that the erasing life of EEPROM is about 1 million times. After the erasing times are exceeded, the reliability of data storage will be affected. If it is not necessary, it is recommended to use the method of writing RAM to control communication.

6.1 RS485 Communication Registers

Name	Address	Description	Data Remarks	Feature
Set Frequency	1000H	-10000 to 10000	$\pm 100.00\% * F0.10$	R/W
Control Command	2000H	0001: FWD Running	-	written only
		0002: REV Running	-	written only
		0003: FWD JOG	-	written only
		0004: REV JOG	-	written only
		0005: Free Stop(Coast to Stop)	-	written only
		0006: Deceleration Stop	-	written only
		0007: Error Reset	-	written only
Running Status	3000H	0001: FWD Running	-	read only
		0002: REV Running	-	read only
		0003: Stopped	-	read only
Monitoring Data	1001H	Running Frequency(Hz)	2 decimal places	read only
	1002H	Set Frequency(Hz)	2 decimal places	read only
	1003H	Bus Voltage(V)	1 decimal places	read only
	1004H	Output Voltage(V)	1 decimal places	read only
	1005H	Output Current(A)	2 decimal places	read only
	100DH	IGBT Temperature	1 decimal places	read only
	1008H	DI Input Status	DI1-DI4 Add up by binary bit	read only

Name	Address	Description	Data Remarks	Feature
	100CH	Keypad Potentiometer Voltage(V)	1 decimal places	read only
	100AH	AI Input Voltage(V)	1 decimal places	read only
	1000FH	Motor RPM	1 decimal places	read only
	1012H	PLC Stage	0-15	read only
Error Record	8000H	0000: No Error	-	read only
		0002: Overcurrent during acceleration	-	read only
		0003: Overcurrent during deceleration	-	read only
		0004: Overcurrent at constant speed	-	read only
		0005: Overvoltage during acceleration	-	read only
		0006: Overvoltage during deceleration	-	read only
		0007: Overvoltage at constant speed	-	read only
		0009: Low input voltage	-	read only
		000A: VFD overload	-	read only
		000B: Motor overload	-	read only
		000D: Output phase loss	-	read only
		000E: IGBT overheat	-	read only
		000F: External alarm input	-	read only
		0012: Current detection failure	-	read only
		0015: Parameter R/W failure	-	read only
Communication Failure Record	8001H	0000: No Error	-	read only
		0001: Command code error	-	read only
		0002: Communication transmission error	-	read only
		0003: CRC Check error	-	read only
		0004: Invalid Address	-	read only
		0005: Invalid Data	-	read only
		0006: Invalid parameter setting	-	read only
		0007: System Locked	-	read only
		0008: Parameter setting	-	read only

Table 6-1 Control Command Addresses