VFD-ME300
Installation Introduction
Basic Compact Drive

User Manual-EN

- ☑ Please read this instruction sheet thoroughly before installation and keep this instruction sheet properly.
- ☑ To ensure the safety of operators and equipment, only qualified personnel familiar with AC motor drives are allowed to do installation, trial run and parameter settings. Always read this instruction sheet thoroughly before using the AC motor drive, especially the WARNING, DANGER and CAUTION notes. If you have any questions, please contact your dealer.

PLEASE READ PRIOR TO INSTALLATION FOR SAFETY.

DANGER

- ☑ AC input power must be disconnected before any wiring to the AC motor drive is made.
- ☑ Even if the power has been turned off, a charge may still remain in the DC-link capacitors with hazardous voltages before the POWER LED is OFF. Please do not touch the internal circuit and components.
- ☑ There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. Please do not touch these components or the circuit boards before taking anti-static measures.
- ☑ Never reassemble internal components or wiring.
- ☑ Ground the AC motor drive using the ground terminal. The grounding method must comply with the laws of the country where the AC motor drive is to be installed.
- ☑ DO NOT install the AC motor drive in a place subjected to high temperature, direct sunlight and inflammables.

CAUTION

- ☑ Never connect the AC motor drive output terminals U/T1, V/T2 and W/T3 directly to the AC mains circuit power supply.
- ☑ Rated voltage of power system to install motor drives is as below, make sure that the installation voltage is within the ranges mentioned below while installing the motor drives:
  1. For 115V models, the variable range is between 85V and 132V.
  2. For 230V models, the variable range is between 170V and 264V.
  3. For 460V models, the variable range is between 323V and 528V.
- ☑ Refer to the table below for short circuit rating:

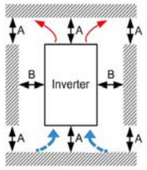
Model (Power)	Short circuit rating
115V	5 kA
230V	5 kA
460V	5 kA

- ☑ Only qualified persons are allowed to install, wire and maintain the AC motor drives.
- ☑ Even if the 3-phase AC motor is stopped, a charge may still remain in the main circuit terminals of the AC motor drive with hazardous voltages.
- ☑ The performance of electrolytic capacitor will degrade if it is not charged for a long time. It is recommended to charge the drive which is stored in no charge condition every 2 years for 3–4 hours to restore the performance of electrolytic capacitor in the motor drive.
  Note: When power up the motor drive, use adjustable AC power source (ex. AC autotransformer) to charge the drive at 70%–80% of rated voltage for 30 minutes (do not run the motor drive). Then charge the drive at 100% of rated voltage for an hour (do not run the motor drive). By doing these, restore the performance of electrolytic capacitor before starting to run the motor drive. Do NOT run the motor drive at 100% rated voltage right away.
- ☑ Pay attention to the following when transporting and installing this package (including wooden crate, wood stave and carton box)
  1. If you need to sterilize, deworm the wooden crate or carton box, please do not use steamed smoke sterilization or you will damage the VFD.
  2. Please use other ways to sterilize or deworm.
  3. You may use high temperatures to sterilize or deworm. Leave the packaging materials in an environment of over 56°C for 30 minutes.
  4. It is strictly forbidden to use steamed smoking sterilization. The warranty does not covered VFD damaged by steamed smoking sterilization.
- ☑ Connect the drive to a 3-phase three-wire or 3-phase four-wire Wye system to comply with UL standards.
- ☑ If the motor drive produces a leakage current of over 3.5mA AC or over 10mA DC on the Protective Earthing conductor, the minimum specifications required of the Protective Earthing conductor to be installed have to comply with the national, local laws and regulations or follow IEC61800-5-1 to do grounding.

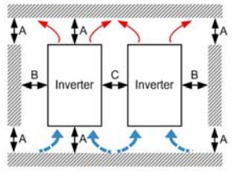
Mounting Clearance

Inflow ⟵ Outflow ⟵ Distance ⟷

Single drive installation



Side-by-side horizontal installation/ Zero stack installation

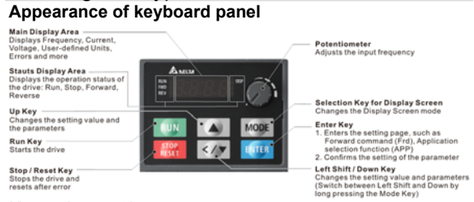


Installation Method	Distance A	Distance B	Distance C	Ambient temperature (ºC) Max. (Without derating)	Ambient temperature (ºC) Max. (derating)
Single drive installation	50	30	-	50	60
Side-by-side horizontal installation	50	30	30	50	60
Zero stack installation	50	30	0	40	50

🕮 The minimum mounting clearances A–C stated in the table above applies to AC motor drives installation. Failing to follow the minimum mounting clearances may cause the fan to malfunction and heat dissipation problems.

Digital Keypad

Appearance of keyboard panel



Keypad operation process

Main Page Selection

F500 ⇨ H000 ⇨ U220 ⇨ A000 ⇨

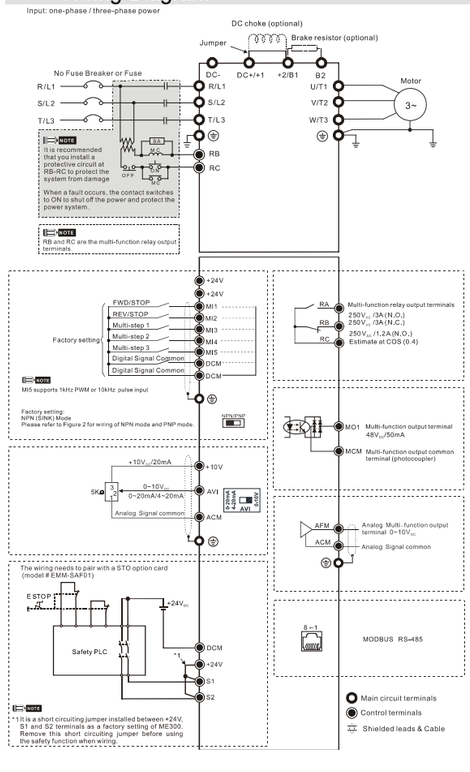
Frd ⇨ APP

Point 1: In screen selection mode enter to set parameter
Point 2: APP displayed only when Pr.13-00≠0

🕮 Please refer to Chapter 10 Digital Keypad for more information.

Wiring Diagram

Input: one-phase / three-phase power



Parameter Settings

🕮 For more detailed parameter settings, please refer to the user manual.
🕮 Scan the QR Code to download the user manual at http://www.deltaww.com/iadownload_acmotordrive.

00 Drive Parameters

Pr.	Explanation	Default
00-00	Identity code of the AC motor drive	Read only
00-01	Display AC motor drive rated current	Read only
00-02	Parameter reset	0
00-03	Select start-up display	0
00-04	Content of Multi-function display (user-defined)	3
00-05	Coefficient gain in actual output frequency	1.00
00-06	Coefficient gain in actual output frequency	#.#
00-07	Firmware version	0
00-08	Parameter protection password input	0
00-10	Parameter protection password setting	0
00-11	Speed Control mode 0: VF (IM V/F control) 2: SVC (Pr.05-33 set as IM or PM)	0
00-16	Load selection	1
00-17	Carrier frequency	4
00-20	Master frequency command (AUTO) source 0: Digital keypad 1: RS-485 communication 2: External analog input(refer to Pr.03-00) 3: External UP/DOWN terminal 4: Pulse input without direction command (refer to Pr.10-16 without direction) 7: Digital keypad dial	0
00-21	Operation command (AUTO) source 0: Digital keypad 1: External terminals 2: RS-485 communication input	0
00-22	Stop method	0
00-23	Control of motor direction	0
00-24	Digital keypad frequency command memory	Read only
00-25	User-defined characteristics	0
00-26	Maximum user-defined value	0
00-27	User-defined value	Read only
00-29	LOCAL / REMOTE mode	0
00-30	Master frequency command (HAND) source 0: Digital keypad 1: RS-485 communication 2: External analog input(refer to Pr.03-00) 3: External UP/DOWN terminal 7: Digital keypad dial	0
00-31	Operation command (HAND) source 0: Digital keypad 1: External terminals 2: RS-485 communication	0
00-32	Digital keypad STOP function	0
00-48	Display filter time (current)	0.100
00-49	Display filter time (keypad)	0.100
00-50	Software version (date)	######

01 Basic Parameters

Pr.	Explanation	Default
01-00	Maximum operation frequency of motor 1	60.00 / 50.00
01-01	Output frequency of motor 1	60.00 / 50.00
01-02	Output voltage of motor 1	220.0 / 440.0
01-03	Mid-point frequency 1 of motor 1	3.00
01-04	Mid-point voltage 1 of motor 1	11.0 / 22.0
01-05	Mid-point frequency 2 of motor 1	1.5
01-06	Mid-point voltage 2 of motor 1	5.0 / 10.0
01-07	Minimum output frequency of motor 1	0.50
01-08	Minimum output voltage of motor 1	1.0 / 2.0
01-09	Start-up frequency	0.50
01-10	Output frequency upper limit	599.00
01-11	Output frequency lower limit	0.00
01-12–01-19	Acceleration / Deceleration time	10.00 / 10.0
01-20–01-21	JOG acceleration / deceleration time	10.00 / 10.0
01-22	JOG frequency	6.00
01-23	First / Fourth acceleration / deceleration frequency	0.00
01-24–01-27	S-curve acceleration / deceleration begin / arrival time 1, 2	0.20 / 0.2
01-28–01-33	Skip frequency 1–3 upper / lower limit	0.00
01-34	Zero-speed mode	0
01-35	Output frequency of motor 2	60.00 / 50.00
01-36	Output voltage of motor 2	220.0 / 440.0
01-37	Mid-point frequency 1 of motor 2	3.00
01-38	Mid-point voltage 1 of motor 2	11.0 / 22.0
01-39	Mid-point frequency 2 of motor 2	0.50
01-40	Mid-point voltage 2 of motor 2	2.0 / 4.0
01-41	Minimum output frequency of motor 2	0.00
01-42	Minimum output voltage of motor 2	0.0
01-43	V/F curve selection	0
01-44	Auto-acceleration and auto-deceleration setting	0
01-45	Time unit for acceleration and deceleration and S-curve	0
01-49	Deceleration method	0
01-52	Maximum operation frequency of motor 2	60.00 / 50.00

02 Digital Input / Output Parameters

Pr.	Explanation	Default
02-00	Two-wire / Three-wire operation control 0: No function 1: Two-wire mode 1, power on for operation control (M1: FWD/STOP, M2: REV/STOP) 2: Two-wire mode 2, power on for operation control (M1: RUN/STOP, M2: FWD/REV) 3: Three-wire, power on for operation control (M1: RUN, M2: REV/FWD, M3: STOP) 4: Two-wire mode 1, Quick Start (M1: FWD/STOP, M2: REV/STOP) 5: Two-wire mode 2, Quick Start (M1: RUN/STOP, M2: FWD/REV) 6: Three-wire, Quick Start (M1: RUN, M2: REV/FWD, M3: STOP)	1
02-01	Multi-function input command 1 (MI1)	0
02-02	Multi-function input command 2 (MI2)	0
02-03	Multi-function input command 3 (MI3)	1
02-04	Multi-function input command 4 (MI4)	2
02-05	Multi-function input command 5 (MI5)	3
	0: No function 1: Multi-step speed command 1 / multi-step position command 1 2: Multi-step speed command 2 / multi-step position command 2 3: Multi-step speed command 3 / multi-step position command 3 4: Multi-step speed command 4 / multi-step position command 4 5: Reset 6: JOG operation 7: Acceleration / deceleration speed inhibit 8: 1st and 2nd acceleration / deceleration time selection 9: 3rd and 4th acceleration / deceleration time selection 10: EF Input (Pr.07-20) 11: Base Block (B.B.) input from external 12: Output stop 13: Cancel the setting for auto-acceleration / auto-deceleration time 15: Rotating speed command from AVI 18: Forced to stop (Pr.07-20) 19: Digital up command 20: Digital down command 21: PID function disabled 22: Clear the counter 23: Input the counter value (MI4) 24: FWD JOG command 25: REV JOG command 28: Emergency stop (EF1) 29: Signal confirmation for Y-connection 30: Signal confirmation for Δ-connection 38: Disable write EEPROM function 40: Force coasting to stop 41: HAND switch 42: AUTO switch 49: Enable Drive 50: Master dEb input 56: Local/Remote selection 69: Auto-activate preheating function 71: Disable PID function, force PID output return to 0 72: Disable PID function, retain the output value before disabled 73: Force PID integral gain return to 0, disable integral 74: Reverse PID feedback 83: Multi-motors (IM) selection bit 0 94: Programmable AUTO RUN 95: Pausing AUTO RUN 97: Multi-pumps switch by Hand / Auto mode 98: Simple positioning stop by forward limit 99: Simple positioning stop by reverse limit	
02-09	UP / DOWN key mode	0
02-10	Constant speed; acceleration / deceleration speed of UP/DOWN key	0.001
02-11	Multi-function input response time	0.005
02-12	Multi-function input mode selection	0000
02-13	Multi-function output 1 RY1	11
02-16	Multi-function output 2 (MO1)	0
	0: No function 1: Indication during RUN 2: Operation speed reached 3: Desired frequency reached 1 (Pr.02-22) 4: Desired frequency reached 2 (Pr.02-24) 5: Zero speed (Frequency command) 6: Zero speed including STOP (Frequency command) 7: Over-torque 1 (Pr.06-06–06-08) 8: Over-torque 2 (Pr.06-09–06-11) 9: Drive is ready 10: Low voltage warning (LV) (Pr.06-00) 11: Malfunction indication 13: Over-heat warning (Pr.06-15) 14: Software brake signal indication (Pr.07-00) 15: PID feedback error 16: Slip error (oSL) 17: Count value reached; does not return to 0 (Pr.02-20) 18: Count value reached; returns to 0(Pr.02-19) 19: External interrupt B.B. input (Base Block) 20: Warning output 21: Over-voltage 22: Over-current stall prevention 23: Over-voltage stall prevention 24: Operation source 25: Forward command	
	26: Reverse command 29: Output when frequency ≥ Pr.02-34 30: Output when frequency < Pr.02-34 31: Y-connection for the motor coil 32: Δ-connection for the motor coil 33: Zero speed (actual output frequency) 34: Zero speed including STOP (actual output frequency) 35: Error output selection 1 (Pr.06-23) 36: Error output selection 2 (Pr.06-24) 37: Error output selection 3 (Pr.06-25) 38: Error output selection 4 (Pr.06-26) 40: Speed reached (including STOP) 42: Crane function 43: Motor speed slower than Pr.02-47 44: Low current output (use with Pr.06-71–06-73) 45: UVW output electromagnetic valve switch 46: Master dEb output 51: Output control for RS-485 66: SO output logic A (use with STO Card) 67: Analog input level reached 68: SO output logic B (use with STO Card) 69: Indication of Preheating 75: Forward RUN status 76: Reverse RUN status 77: Program Running Indication 78: Program Step Completed Indication 79: Program Running Completed Indication 80: Program Running Paused Indication 81: Multi-pump system error display (only master)	
02-18	Multi-function output direction	0000
02-19	Terminal counting value reached (returns to 0)	0
02-20	Preliminary counting value reached (does not return to 0)	0
02-22	Desired frequency reached 1	60.00 / 50.00
02-23	Width of desired frequency reached 1	2.00
02-24	Desired frequency reached 2	60.00 / 50.00
02-25	Width of desired frequency reached 2	2.00
02-34	Output frequency setting for multi-function output terminal	0.00
02-35	External operation control selection after reset and activate	0
02-47	Motor zero-speed level	0
02-50	Display the status of multi-function input terminal	Read only
02-51	Display the status of multi-function output terminal	Read only
02-54	Display the Frequency command executed by external terminal	Read only
02-58	Multi-function output terminal (function 42): brake frequency check point	0.00
02-72	Level of Preheating DC Current	0
02-73	Preheating DC Current Duty Cycle	0
02-81	EF active when terminal count value reached	0
02-82	Initial Frequency command (F) mode after stop	0
02-83	Initial Frequency command (F) setting after stop	60.00

03 Analog Input / Output Parameters

Pr.	Explanation	Default
03-00	Analog input selection (AVI) 0: No function 1: Frequency command 4: PID target value 5: PID feedback signal 6: PTC thermistor input value 11: PT100 thermistor input value 13: PID compensation value	1
03-03	Analog input bias (AVI)	0
03-04	Analog input bias (ACI)	0
03-07	Positive / negative bias mode (AVI)	0
03-08	Positive / negative bias mode (ACI)	0
03-10	Reverse setting when analog signal input is negative frequency	0
03-11	Analog input gain (AVI)	100.0
03-12	Analog input gain (ACI)	100.0
03-15	Analog input filter time (AVI)	0.01
03-16	Analog input filter time (ACI)	0.01
03-19	Signal loss selection for analog input 4–20 mA	0
03-20	Multi-function output (AFM) 0: Output frequency (Hz) 1: Frequency command (Hz) 2: Motor speed (Hz) 3: Output current (rms) 4: Output voltage 5: DC BUS voltage 6: Power factor 7: Power 9: AVI 12: Iq current command 13: Iq feedback value 14: Id current command 15: Id feedback value 16: Vq-axis voltage command 17: Vd-axis voltage command 21: RS-485 analog output 23: Constant voltage output	0
03-21	Analog output gain (AFM)	100.0
03-22	Analog output in REV direction (AFM)	0
03-27	AFM output bias	0.00

Pr.	Explanation	Default
03-28	AVI terminal input selection	0
03-32	AFM DC output setting level	0.00
03-35	AFM filter output time	0.01
03-39	VR input selection 0: Disable 1: Frequency command	1
03-40	VR Input Bias	0.0
03-41	VR Positive / Negative Bias	0.
03-42	VR Gain	100.0
03-43	VR Filter Time	0.01
03-44	Multi-function MO output by AI level source	0
03-45	AI upper level 1	50
03-46	AI lower level 2	10
03-50	Analog input curve selection	0
03-57	ACI lowest point	4.00
03-58	ACI proportional lowest point	0.00
03-59	ACI mid-point	12.00
03-60	ACI proportional mid-point	50.00
03-61	ACI highest point	20.00
03-62	ACI proportional highest point	100.00
03-63	AVI voltage lowest point	0.00
03-64	AVI voltage proportional lowest point	0.00
03-65	AVI voltage mid-point	5.00
03-66	AVI voltage proportional mid-point	50.00
03-67	AVI voltage highest point	10.00
03-68	AVI voltage proportional highest point	100.00

04 Multi-step Speed Parameters

Pr.	Explanation	Default
04-00–04-14	1st–15th step speed frequency	0.00

05 Motor Parameters

Pr.	Explanation	Default
05-00	Motor parameter auto-tuning 0: No function 1: Dynamic test for induction motor (IM) 2: Static test for induction motor (IM) 13: High frequency stall test for PM synchronous motor	0
05-01	Full-load current for induction motor 1 (A)	#.##
05-02	Rated power for induction motor 1 (kW)	#.##
05-03	Rated speed for induction motor 1 (rpm)	1710
05-04	Number of poles for induction motor 1	4
05-05	No-load current for induction motor 1 (A)	#.##
05-06	Stator resistance (Rs) for induction motor 1	#.###
05-07	Rotor resistance (Rr) for induction motor 1	#.###
05-08	Magnetizing inductance (Lm) for induction motor 1	#.#
05-09	Stator inductance (Lx) for induction motor 1	#.#
05-13	Full-load current for induction motor 2 (A)	#.##
05-14	Rated power for induction motor 2 (kW)	#.##
05-15	Rated speed for induction motor 2 (rpm)	1710
05-16	Number of poles for induction motor 2	4
05-17	No-load current for induction motor 2 (A)	#.##
05-18	Stator resistance (Rs) for induction motor 2	#.###
05-19	Rotor resistance (Rr) for induction motor 2	#.###
05-20	Magnetizing inductance (Lm) for induction motor 2	#.#
05-21	Stator inductance (Lx) for induction motor 2	#.#
05-22	Multi-motors (induction) selection	1
05-23	Frequency for Y-connection /Δ-connection switch for an induction motor	60.00
05-24	Y-connection /Δ-connection switch for an induction motor	0
05-25	Delay time for Y-connection /Δ-connection switch for an induction motor	0.200
05-28	Accumulated Watt-hour for a motor (W-hour)	0.0
05-29	Accumulated Watt-hour for a motor in low word (kW-hour)	0.0
05-30	Accumulated Watt-hour for a motor in high word (MW-hour)	0.0
05-31	Accumulated motor operation time (minutes)	0
05-32	Accumulated motor operation time (days)	0
05-33	Induction motor (IM) or permanent magnet synchronous motor selection 0: Induction motor 1: SPM 2: IPM	0
05-34	Full-load current for a permanent magnet synchronous motor	#.#
05-35	Rated power for a permanent magnet synchronous motor	#.#
05-36	Rated speed for a permanent magnet synchronous motor	2000
05-37	Number of poles for a permanent magnet synchronous motor	10
05-39	Stator resistance for a permanent magnet synchronous motor	0.000
05-40	Permanent magnet synchronous motor Ld	0.00
05-41	Permanent magnet synchronous motor Lq	0.00
05-43	Ke parameter of a permanent magnet synchronous motor	0

06 Protection Parameters (1)

Pr.	Explanation	Default
06-00	Low voltage level	180.0 / 360.0
06-01	Over-voltage stall prevention	380.0 / 760.0
06-02	Selection for over-voltage stall prevention	0
06-03	Over-current stall prevention during acceleration	120 / 180
06-04	Over-current stall prevention during operation	120 / 180
06-05	Acceleration / deceleration time selection for stall prevention at constant speed	0
06-06	Over-torque detection selection (motor 1)	0
06-07	Over-torque detection level (motor 1)	120
06-08	Over-torque detection time (motor 1)	0.1
06-09	Over-torque detection selection (motor 2)	0
06-10	Over-torque detection level (motor 2)	120
06-11	Over-torque detection time (motor 2)	0.1
06-13	Electronic thermal relay selection (motor 1)	2
06-14	Electronic thermal relay action time (motor 1)	60.0
06-15	Temperature level over-heat (OH) warning	105.0
06-16	Stall prevention limit level	100
06-17–06-22	Fault record 1–6	0
06-23–06-26	Fault output option 1-4	0
06-27	Electronic thermal relay selection (motor 2)	2
06-28	Electronic thermal relay action time (motor 2)	60.0
06-29	PTC detection selection	0
06-30	PTC level	50.0
06-31	Frequency command for malfunction	Read only
06-32	Output frequency at malfunction	Read only
06-33	Output voltage at malfunction	Read only
06-34	DC voltage at malfunction	Read only
06-35	Output current at malfunction	Read only
06-36	IGBT temperature at malfunction	Read only
06-38	Motor speed at malfunction	Read only
06-40	Status of the multi-function input terminal at malfunction	Read only
06-41	Status of the multi-function output terminal at malfunction	Read only
06-42	Drive status at malfunction	Read only
06-44	STO latch selection	0
06-45	Output phase loss detection (OPHL) action	3
06-46	Detection time of output phase loss	0.500
06-47	Current detection level for output phase loss	1.00
06-48	DC brake time of output phase loss	0.000
06-49	LvX auto-reset	0
06-53	Detected input phase loss (OrP) action	0
06-55	Derating protection	0
06-56	PT100 voltage level 1	5.000
06-57	PT100 voltage level 2	7.000
06-58	PT100 level 1 frequency protection	0.00
06-59	Delay time for activating PT100 level 1 frequency protection	60
06-60	Software detection GFF current level	60.0
06-61	Software detection GFF filter time	0.10
06-63–06-70	Operation time of fault record 1–4 (Days / Minutes)	Read only
06-71	Low current setting level	0.0
06-72	Low current detection time	0.00
06-73	Low current action	0
06-90–06-93	Operation time of fault record 5–6 (Day / Minutes)	Read only

07 Special Parameters

Pr.	Explanation	Default
07-00	Software brake level	370.0 / 740.0
07-01	DC brake current level	0
07-02	DC brake time at RUN	0.0
07-03	DC brake time at stop	0.0
07-04	DC brake frequency at stop	0.00
07-05	Voltage increasing gain	100
07-06	Restart after momentary power loss 0: Stop operation 1: Speed tracking by speed before the power loss 2: Speed tracking by minimum output frequency	0
07-07	Allowed power loss duration	2.0
07-08	Base Block time	0.5
07-09	Current limit of speed tracking	100
07-10	Restart after fault action	0
07-11	Number of times of auto-restart after fault	0
07-12	Speed tracking during start-up	0
07-13	dEb function selection	0
07-15–07-18	Dwell time / frequency at acceleration / deceleration	0.00
07-19	Fan cooling control	3
07-20	Deceleration of emergency or forced stop	0
07-21	Automatic energy-saving selection	0
07-22	Energy-saving gain	100
07-23	Auto voltage regulation (AVR) function	0
07-24	Torque command filter time (V/F and SVC control mode)	0.050
07-25	Slip compensation filter time (V/F and SVC control mode)	0.100
07-26	Torque compensation gain	1
07-27	Slip compensation gain (V/F and SVC control mode)	0.00
07-29	Slip deviation level	0
07-30	Slip deviation detection time	1.0
07-31	Slip deviation action	0
07-32	Motor shock compensation factor	1000
07-33	Auto-restart interval of fault	60.0
07-43	Average PWM signal	1
07-44	PWM signal period	1
07-62	dEb gain	8000
07-71	Torque compensation gain (motor 2)	1
07-72	Slip compensation gain (motor 2)	0.00

08 High-function PID Parameters

Pr.	Explanation	Default
08-00	Terminal selection of PID feedback 0: No function 1: Negative PID feedback: by analog input (Pr.03-00) 4: Positive PID feedback: by analog input (Pr.03-00) 7: Negative PID feedback: by communication protocol 8: Positive PID feedback: by communication protocol	0
08-01	Proportional gain (P)	1.0 / 1.00
08-02	Integral time (I)	1.00
08-03	Differential time (D)	0.00
08-04	Upper limit of integral control	100.0
08-05	PID output command limit (positive limit)	100.0
08-06	PID feedback value by communication protocol	0.00
08-07	PID delay time	0.0
08-08	Feedback signal detection time	0.0
08-09	Feedback signal fault treatment	0
08-10	Sleep frequency	0.00
08-11	Wake-up frequency	0.00
08-12	Sleep time	0.0
08-13	PID deviation level	10.0
08-14	PID deviation time	5.0
08-15	PID feedback filter time	5.0
08-16	PID compensation selection	0
08-17	PID compensation	0
08-18	Sleep mode function setting	0
08-19	Wake-up integral limit	50.0
08-20	PID mode selection	0
08-21	Enable PID to change the operation direction	0
08-22	Wake-up delay time	0.00
08-23	PID control flag	2
08-26	PID output command limit (reverse limit)	100.0
08-27	PID command acceleration / deceleration time	0.00
08-61	Feedback of PID physical quantity value	99.9
08-62	Treatment of the erroneous PID feedback level	0
08-63	Delay time for restart of erroneous PID deviation level	60
08-64	Number of times of restart after PID error	0

09 Communication Parameters

Pr.	Explanation	Default
09-00	Communication address	1
09-01	COM1 transmission speed	9.6
09-02	COM1 transmission fault treatment	3
09-03	COM1 time-out detection	0.0
09-04	COM1 communication protocol 1: 7N2 (ASCII) 2: 7E1 (ASCII) 3: 7O1 (ASCII) 4: 7E2 (ASCII) 5: 7O2 (ASCII) 6: 8N1 (ASCII) 7: 8N2 (ASCII) 8: 8E1 (ASCII) 9: 8O1 (ASCII) 10: 8E2 (ASCII) 11: 8O2 (ASCII) 12: 8N1 (RTU) 13: 8N2 (RTU) 14: 8E1 (RTU) 15: 8O1 (RTU) 16: 8E2 (RTU) 17: 8O2 (RTU)	1
09-09	Communication response delay time	2.0
09-10	Communication main frequency	60.00
09-11–09-26	Block transfer 1–16	0
09-30	Communication decoding method	1
09-31	Internal Communication Protocol	0

10 Speed Feedback Control Parameters

Pr.	Explanation	Default
10-16	Pulse input type setting	0
10-29	Top limit of frequency deviation	20.00
10-31	I/F mode, current command	40
10-32	PM FOC sensorless speed estimator bandwidth	5.00
10-34	PM sensorless speed estimator low-pass filter gain	1.00
10-42	Initial angle detection pulse value	1.0
10-49	Zero voltage time during start-up	00.000
10-51	Injection frequency	500
10-52	Injection magnitude	15.0 / 30.0
10-53	Position detection method	0

11 Advanced Parameters

Pr.	Explanation	Default
11-00	System control	0
11-41	PWM mode selection 0: Two-phase 2: Space vector	2
11-42	System control flag	0000

12 Function Parameters

Pr.	Explanation	Default
12-00	Set point deviation level	0
12-01	Detection time of set point deviation level	10
12-02	Offset level of liquid leakage	0
12-03	Liquid leakage change detection	0
12-04	Time setting for liquid leakage change	0.5
12-05	Multi-pump control mode 0: Disable 1: Fixed time circulation (alternative operation) 2: Fixed quantity control (multi-pump operating at constant pressure)	0
12-07	Multi-pump's fixed time circulation period	60
12-08	Frequency to start switching pumps	60.00
12-09	Time detected when pump reaches the starting frequency	1.0
12-10	Frequency to stop switching pumps	48.00
12-11	Time detected when pump reaches the stopping frequency	1.0
12-12	Pump's frequency at time-out (disconnection)	0.00
12-13	Pump's error treatment	1
12-14	Selection of pump start-up sequence	1
12-15	Running time of multi-pump under alternative operation	60.0
12-16	Assign the setting for Pr.08-13 PID feedback level	0
12-20	Simple positioning stop frequency 0	0.00
12-21	Simple positioning stop frequency 1	5.00
12-22	Simple positioning stop frequency 2	10.00
12-23	Simple positioning stop frequency 3	20.00
12-24	Simple positioning stop frequency 4	30.00
12-25	Simple positioning stop frequency 5	40.00
12-26	Simple positioning stop frequency 6	50.00
12-27	Simple positioning stop frequency 7	60.00
12-28–12-35	Delay time of simple positioning stop 0–7	0.00
12-40	Automatic operation mode 0: Disable operation 1: Execute one program cycle 2: Continuously execute program cycles 3: Execute one program cycle step by step 4: Continuously execute one program cycle step by step 5: Disable automatic operation, but the direction setting at multi-step speed 1 to 7 are effective	0
12-41	PLC program running direction mode	0
12-42	Main frequency time setting	0
12-43–12-49	1st–7th speed time setting	0

13 Macro / User-Defined Macro

Pr.	Explanation	Default
13-00	Application selection	00
13-01–13-50	Application parameters (user-defined)	

14 Protection Parameters (2)

Pr.	Explanation	Default
14-50	Output frequency at malfunction 2	Read only
14-51	DC voltage at malfunction 2	Read only
14-52	Output current at malfunction 2	Read only
14-53	IGBT temperature at malfunction 2	Read only
14-54	Output frequency at malfunction 3	Read only
14-55	DC voltage at malfunction 3	Read only
14-56	Output current at malfunction 3	Read only
14-57	IGBT temperature at malfunction 3	Read only
14-58	Output frequency at malfunction 4	Read only
14-59	DC voltage at malfunction 4	Read only
14-60	Output current at malfunction 4	Read only
14-61	IGBT temperature at malfunction 4	Read only
14-62	Output frequency at malfunction 5	Read only
14-63	DC voltage at malfunction 5	Read only
14-64	Output current at malfunction 5	Read only
14-65	IGBT temperature at malfunction 5	Read only
14-66	Output frequency at malfunction 6	Read only
14-67	DC voltage at malfunction 6	Read only
14-68	Output current at malfunction 6	Read only
14-69	IGBT temperature at malfunction 6	Read only
14-70–14-73	Fault record 7–10	0

● Troubleshooting

ID No.	Fault Name
0	N/A
1	ocA: Over-current during acceleration
2	ocd: Over-current during deceleration
3	ocn: Over-current during steady operation
4	GFF: Ground fault
6	ocS: Over-current at stop
7	ovA: Over-voltage during acceleration
8	ovd: Over-voltage during deceleration
9	ovn: Over-voltage at constant speed
10	ovS: Over-voltage at stop
11	LvA: Low-voltage during acceleration
12	Lvd: Low-voltage during deceleration
13	Lvn: Low-voltage at constant speed
14	LvS: Low-voltage at stop
15	orP: Phase loss protection
16	oH1: IGBT overheating
18	tH1o: IGBT temperature detection failure
21	oL: Overload
22	EoL1: Electronic thermal relay 1 protection
23	EoL2: Electronic thermal relay 2 protection
24	oH3: Motor overheating PTC / PT100
26	ot1: Over-torque 1
27	ot2: Over-torque 2
28	uC: Under current
31	cF2: EEPROM read error
33	cd1: U-phase error
34	cd2: V-phase error
35	cd3: W-phase error
36	Hd0: cc Hardware failure
37	Hd1: oc Hardware failure
40	AUE: Auto-tuning error
41	AFE: PID loss ACI
48	ACE: ACI loss
49	EF: External fault
50	EF1: Emergency stop
51	bb: External base block
52	Pcod: Password is locked
54	CE1: Illegal command
55	CE2: Illegal data address
56	CE3: Illegal data value
57	CE4: Data is written to read-only address
58	CE10: Modbus transmission time-out
61	ydc: Y-connection / Δ-connection switch error
63	oSL: Over-slip
72	S1: S1 internal loop detection error
76	STo: Safe Torque Off
77	S2: S2 internal loop detection error
78	STL3: S3 internal loop detection error
79	Aoc: U-phase short circuit
80	Boc: V-phase short circuit
81	Coc: W-phase short circuit
82	oPHL: Output phase loss U phase
83	oPHL: Output phase loss V phase
84	oPHL: Output phase loss W phase
87	oL3: Overload protection at low frequency
89	roPd: Rotor position detection error
140	Hd6: GFF detectedwhen power is on
141	b4GFF: GFF occurs before running
142	AUE1: Auto-tune error 1
143	AUE2: Auto-tune error 2
144	AUE3: Auto-tune error 3