DELTA ELECTRONICS, INC.

VFD-VE

User Manual

Field Oriented Control AC Motor Drives

Voltage Range:
3-phase 230V series:0.75~37kW(1.0~50HP)
3-phase 460V series:0.75~75kW(1.0~100HP)

Preface

Thank you for choosing DELTA's high-performance VFD-VE Series. The VFD-VE Series is manufactured with high-quality components and materials and incorporate the latest microprocessor technology available.

📖 Getting Started

This quick start will be helpful in the installation and parameter setting of the AC motor drives. To guarantee safe operation of the equipment, read the following safety guidelines before connecting power to the AC motor drives. For detail information, refer to the VFD-VE User Manual on the CD supplied with the drive.

DANGER!

1. AC input power must be disconnected before any wiring to the AC motor drive is made.
2. A charge may still remain in the DC-link capacitors with hazardous voltages, even if the power has been turned off. To prevent personal injury, please ensure that power has turned off before opening the AC motor drive and wait ten minutes for the capacitors to discharge to safe voltage levels.
3. Never reassemble internal components or wiring.
4. The AC motor drive may be destroyed beyond repair if incorrect cables are connected to the input/output terminals. Never connect the AC motor drive output terminals U/T1, V/T2, and W/T3 directly to the AC mains circuit power supply.
5. Ground the VFD-VE using the ground terminal. The grounding method must comply with the laws of the country where the AC motor drive is to be installed. Refer to the Basic Wiring Diagram.
6. VFD-VE series is used only to control variable speed of 3-phase induction motors, NOT for 1-phase motors or other purpose.
7. VFD-VE series is the specific drive for the elevator door and other automatic door control, NOT for those devices that may cause personal injury, such as life support equipment or any life safety situation.
8. To prevent drive damage, the RFI jumper connected to ground shall be cut off if the AC motor drive is installed on an ungrounded power system or a high resistance-grounded (over 30 ohms) power system or a corner grounded TN system.

WARNING!

1. DO NOT use Hi-pot test for internal components. The semi-conductor used in AC motor drive easily damage by high-pressure.
2. There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. To prevent damage to these components, do not touch these components or the circuit boards with metal objects or your bare hands.
3. Only quality person is allowed to install, wire and maintain AC motor drive.

CAUTION!

1. Some parameters settings can cause the motor to run immediately after applying power.
2. DO NOT install the AC motor drive in a place subjected to high temperature, direct sunlight, high humidity, excessive vibration, corrosive gases or liquids, or airborne dust or metallic particles. Only use AC motor drives within specification. Failure to comply may result in fire, explosion or electric shock. To prevent personal injury, please keep children and unqualified people away from the equipment.
3. When the motor cable between AC motor drive and motor is too long, the layer insulation of the motor may be damaged. Please use a frequency inverter duty motor or add an AC output reactor to prevent damage to the motor. Refer to user manual for details.
4. The rated voltage for AC motor drive must be ≤ 240V (≤ 480V for 460V models) and the mains supply current capacity must be ≤ 5000A RMS (≤10000A RMS for the ≥ 40hp (30kW) models).

Specifications

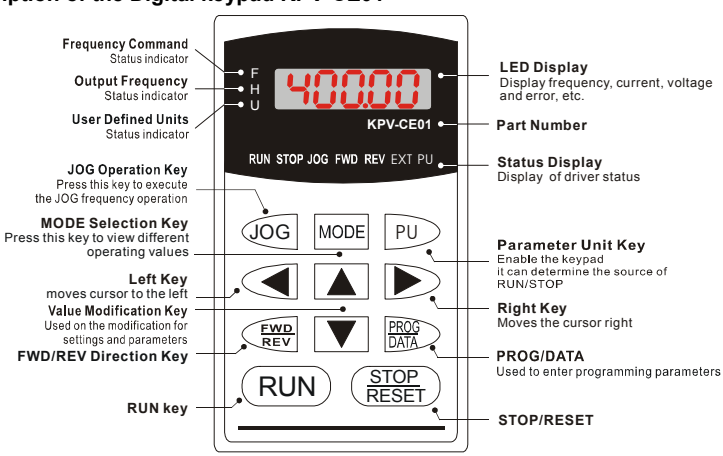
Voltage Class		230V Class											
Model Number VFD-XXXV		007	015	022	037	055	075	110	150	185	220	300	370
Max. Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
Max. Applicable Motor Output (hp)		1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	40	50
Output Rating	Rated Output Capacity (kVA)	1.9	2.7	4.2	6.5	9.5	13	19	25	29	34	46	55
	Rated Output Current for Constant Torque (A)	5.0	7.5	11	17	25	33	49	65	75	90	120	146
	Rated Output Current for Variable Torque (A)	6.25	9.4	13	21	31	41	61	81	93	112	150	182
	Maximum Output Voltage (V)	3-Phase Proportional to Input Voltage											
	Output Frequency (Hz)	0.00~600.00 Hz											
	Carrier Frequency (kHz)	15			9						6		
Input Rating	Rated Input Current (A)	6.4	9.9	15	21	25	33	52	63	68	79	106	126
	Rated Voltage/Frequency	3-phase 200-240V, 50/60Hz											
	Voltage Tolerance	± 10%(180~264 V)											
	Frequency Tolerance	± 5%(47~63 Hz)											
Cooling Method		Natural	Fan Cooled										
Weight (kg)		2.7	3.2	4.5	6.8	8	10	13	13	13	13	36	36

Voltage Class		460V Class													
Model Number VFD-XXXV		007	015	022	037	055	075	110	150	185	220	300	370	450	550	750
Max. Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Max. Applicable Motor Output (hp)		1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	40	50	60	75	100
Output Rating	Rated Output Capacity (kVA)	2.3	3.2	4.2	6.3	9.9	14	18	24	29	34	46	56	69	80	100
	Rated Output Current for Constant Torque (A)	3.0	4.2	6.0	8.5	13	18	24	32	38	45	60	73	91	110	150
	Rated Output Current for Variable Torque (A)	3.8	5.3	7.5	10	16	22	30	40	47	56	75	91	113	138	188
	Maximum Output Voltage (V)	3-phase Proportional to Input Voltage													
	Output Frequency (Hz)	0.00~600.00 Hz													
	Carrier Frequency (kHz)	15				9					6				
Input Rating	Rated Input Current (A)	3-phase 380~480V													
		4.0	5.8	7.4	9.9	12	17	25	27	35	42	56	67	87	101	122
	Rated Voltage	3-phase 380 to 480 V													
	Voltage Tolerance	± 10%(342~528 V)													
	Frequency Tolerance	± 5%(47~63 Hz)													
Cooling Method		Natural	Fan Cooled												
Weight (kg)		2.7	3.2	4.5	6.8	8	10	13	13	13	13	36	36	36	50	50

General Specifications		
Control Characteristics	Control System	SPWM(Sinusoidal Pulse Width Modulation) selections: 1 V/f curve; 2 V/f+PG; 3 SVC; 4 FOC+PG; 5 TQR+PG
	Start Torque	Starting torque is 150% at 0.5Hz and 0Hz with FOC + PG control mode
	Speed Control Range	1:100 Sensorless vector (up to 1:1000 when using PG card)
	Speed Control Resolution	± 0.5% Sensorless vector (up to ± 0.02% when using PG card)
	Speed Response Ability	5Hz (up to 30Hz for vector control)
	Max. Output Frequency	0.00 to 600.00Hz
	Output Frequency Accuracy	Digital command ± 0.005%, analog command ± 0.5%
	Frequency Setting Resolution	Digital command ± 0.01Hz, analog command: 1/1000(10bit) of the max. output frequency
	Torque Limit	Max. is 200% torque current
	Torque Accuracy	± 5%
	Accel/Decel Time	0.00 to 600.00/0.0 to 6000.0 seconds
	V/f Curve	Adjustable V/f curve using 4 independent points and square curve
	Frequency Setting Signal	± 10V, 4~20mA, pulse input
	Braking Torque	About 20%

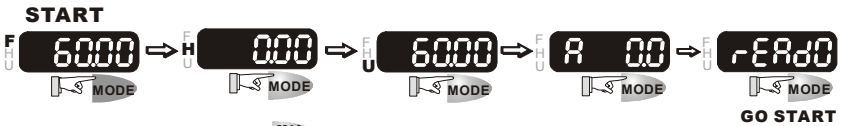
General Specifications		
Protection Characteristics	Motor Protection	Electronic thermal relay protection
	Over-current Protection	The current forces 220% of the over-current protection and 300% of the rated current
	Ground Leakage Current Protection	Higher than 50% X rated current
	Overload Ability	Constant torque: 150% for 60 seconds, variable torque: 200% for 2 seconds
	Over-voltage Protection	Over-voltage level: Vdc > 400/800V; low-voltage level: Vdc < 200/400V
	Over-voltage Protection for the Input Power	Varistor (MOV)
	Over-temperature Protection	Built-in temperature sensor
	Compensation for the Momentory Power Loss	Up to 5 seconds for parameter setting
Enviromental Conditions	Protection Level	NEMA 1/IP21
	Operation Temperature	-10°C to 40°C for 15hp and above & -10°C to 50°C for 10hp and below
	Storage Temperature	-20 °C to 60 °C
	Ambient Humidity	Below 90% RH (non-condensing)
	Vibration	9.80665m/s^2 (1G) less than 20Hz, 5.88m/s^2 (0.6G) at 20 to 50Hz
	Installation Location	Altitude 1,000 m or lower, keep from corrosive gasses, liquid and dust
Approvals		

Description of the Digital keypad KPV-CE01



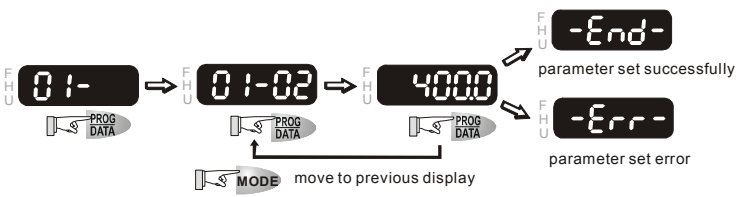
How to Operate the Digital Keypad KPV-CE01

Selection mode



NOTE: In the selection mode, press PROG DATA to set the parameters.

To set parameters



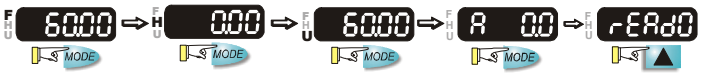
NOTE: In the parameter setting mode, you can press MODE to return to the selection mode.

To shift cursor

To modify data

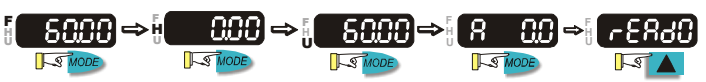
To copy parameters 1

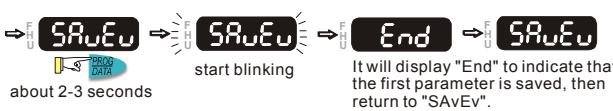
Copy parameters from the AC Motor Drive to the KPV-CE01



To copy parameters 2

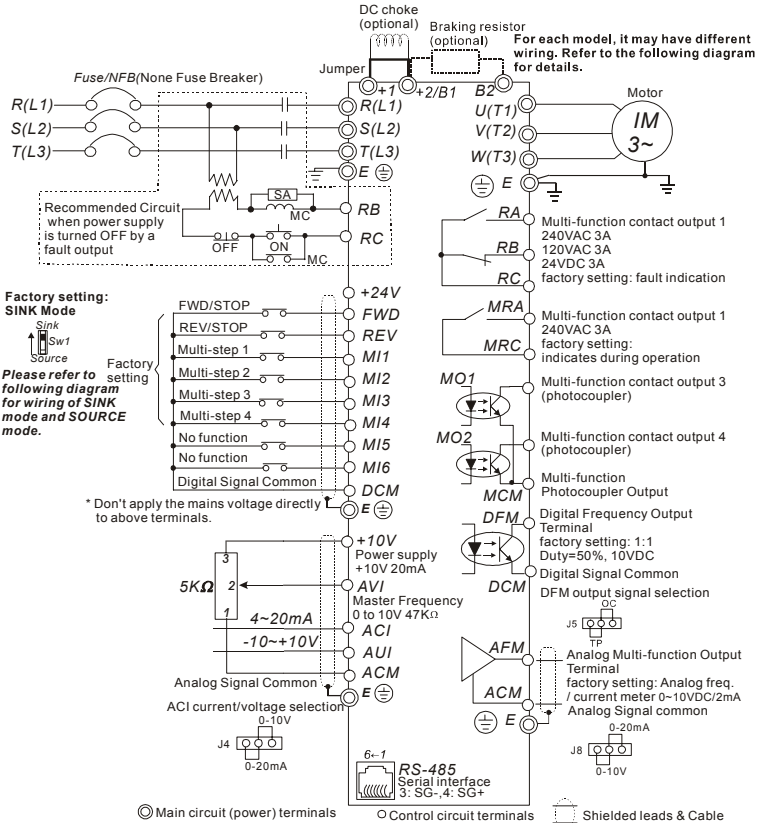
Copy parameters from the KPV-CE01 to the AC Motor Drive





Basic Wiring Diagram

Users must connect wiring according to the following circuit diagram shown below.



NOTE

1. Please turn off the power when J4/J5/J8 is inserted/removed.
2. For communication, it needs to use VFD-USB01/IFD8500 to connect to PC.

Figure 1 for models of VFD-VE Series (15 HP and below)
VFD007V23A/43A-2, VFD015V23A/43A-2,
VFD022V23A/43A-2, VFD037V23A/43A-2,
VFD055V23A/43A-2, VFD075V23A/43A-2,
VFD110V43B-2, VFD110V23A/43A-2

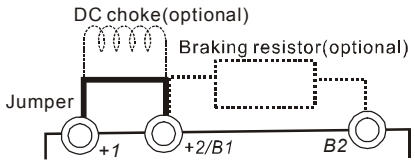


Figure 2 for models of VFD-VE Series (20HP and above)
VFD150V23A/43A-2, VFD185V23A/43A-2, VFD220V23A/43A-2,
VFD300V43A-2, VFD370V43A-2, VFD450V43A-2, VFD300V23A-2,
VFD370V23A-2, VFD550V43C-2, VFD750V43C-2

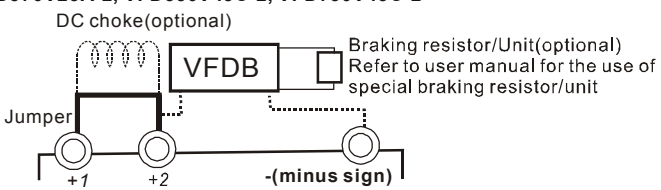
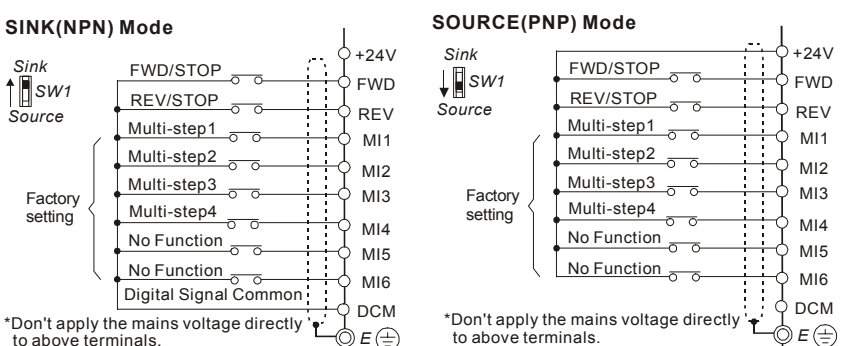


Figure 3 Wiring for SINK(NPN) mode and SOURCE(PNP) mode

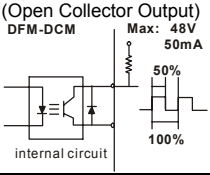


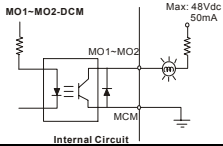
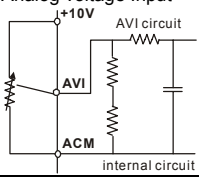
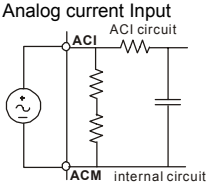
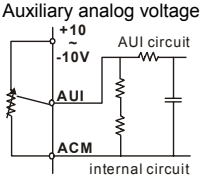
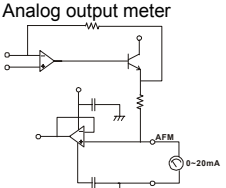
Terminal Explanations

Terminal Symbol		Explanation of Terminal Function
R, S, T	R/L1, S/L2, T/L3	AC line input terminals (1-phase/3-phase)
U, V, W	U/T1, V/T2, W/T3	AC drive output terminals for connecting 3-phase induction motor
P1, P2	+1, +2	Connections for DC Choke (optional)

Terminal Symbol		Explanation of Terminal Function
P-B, P2/B1~B2	+2/B1~B2	Connections for Braking Resistor (optional)
P2~N, P2/B1~N	+2~(-), +2/B1~(-)	Connections for External Braking Unit (VFDB series)
⏚		Earth connection, please comply with local regulations.

Control Terminals Explanations

Terminal Symbol	Terminal Function	Factory Settings (SINK) ON: Connect to DCM
FWD	Forward-Stop Command	ON: Run in FWD direction OFF: Stop acc. to Stop Method
REV	Reverse-Stop Command	ON: Run in REV direction OFF: Stop acc. to Stop Method
MI1	Multi-function Input 1	Refer to Pr.02-01 to Pr.02-06 for programming the Multi-function Inputs.
MI2	Multi-function Input 2	
MI3	Multi-function Input 3	
MI4	Multi-function Input 4	
MI5	Multi-function Input 5	
MI6	Multi-function Input 6	
DFM	Digital Frequency Meter (Open Collector Output) 	Pulse voltage output monitor signal, proportional to output frequency Duty-cycle: 50% Ratio: Pr.02-18 Min. load: 10KΩ Max. current: 50mA Max. voltage: 48VDC.
+24V	DC Voltage Source	+24VDC, 20mA used for SOURCE mode.
DCM	Digital Signal Common	Common for digital inputs and used for SINK mode.
RA	Multi-function Relay Output 1 (N.O.) a	Resistive Load: 5A(N.O.)/3A(N.C.) 240VAC 5A(N.O.)/3A(N.C.) 24VDC Inductive Load: 1.5A(N.O.)/0.5A(N.C.) 240VAC 1.5A(N.O.)/0.5A(N.C.) 24VDC To output monitor signal, including in operation, frequency arrival, overload and etc. Refer to Pr.02-11~02-12 for programming
RB	Multi-function Relay Output 1 (N.C.) b	
RC	Multi-function Relay Common	
MRA	Multi-function Relay Output 2 (N.O.) a	
MRC	Multi-function Relay Common	

Terminal Symbol	Terminal Function	Factory Settings (SINK) ON: Connect to DCM
MO1	Multi-function Output 1 (Photocoupler)	Maximum 48VDC, 50mA Refer to Pr.02-13 to Pr.02-14 for programming 
MO2	Multi-function Output 2 (Photocoupler)	
MCM	Multi-function Output Common (Photocoupler)	Max. 48VDC 50mA
+10V	Potentiometer Power Supply	+10VDC 20mA (variable resistor 3-5kohm)
AVI	Analog voltage Input 	Impedance: 2MΩ Resolution: 10 bits Range: 0 ~ 10VDC = 0 ~ Max. Output Frequency (Pr.01-00) Set-up: Pr.03-00 ~ Pr.03-02
ACI	Analog current Input 	Impedance: 250Ω Resolution: 10 bits Range: 4 ~ 20mA = 0 ~ Max. Output Frequency (Pr.01-00) Set-up: Pr.03-00 ~ Pr.03-02
AUI	Auxiliary analog voltage input 	Impedance: 2MΩ Resolution: 10 bits Range: -10 ~ +10VDC = 0 ~ Max. Output Frequency (Pr.01-00) Set-up: Pr.03-00 ~ Pr.03-02
AFM	Analog output meter 	0 to 10V, 2mA Impedance: 18.5kΩ Output current 2mA max Resolution: output by PWM Range: 0 ~ 10VDC Function: Pr.03-18
ACM	Analog control signal (common)	Common for AVI, ACI, AUI, AFM

*Control signal wiring size: 18 AWG (0.75 mm^2) with shielded wire.

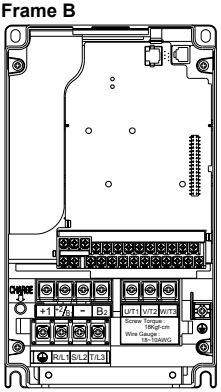
Power Terminals and Control Terminals

Frame	Power range	Models
B	1-5hp (0.75-3.7kW)	VFD007V23A/43A-2, VFD015V23A/43A-2, VFD022V23A/43A-2, VFD037V23A/43A-2
C	7.5-15hp (5.5-11kW)	VFD055V23A/43A-2, VFD075V23A/43A-2, VFD110V43B-2
D	15-30hp (11-22kW)	VFD110V23A/43A-2, VFD150V23A/43A-2, VFD185V23A/43A-2, VFD220V23A/43A-2
E	40-60hp (30-45kW)	VFD300V43A-2, VFD370V43A-2, VFD450V43A-2
E1	40-100hp (30-75kW)	VFD300V23A-2, VFD370V23A-2, VFD550V43C-2, VFD750V43C-2

Control Terminals

Frame	Torque	Wire
B, C, D, E, E1	8 kgf-cm (6.9 in-lbf)	22-14 AWG (0.3-2.1mm^2)

Frame B

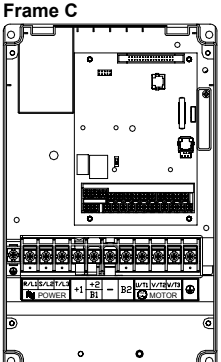


Main circuit terminals

R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, ⏚, +1, +2/B1, -, B2

Models	Wire	Torque	Wire Type
VFD007V23A-2	14-10 AWG (2.1-5.3mm^2)	18kgf-cm (15.6in-lbf)	Stranded copper only, 75°C
VFD007V43A-2			
VFD015V23A-2			
VFD015V43A-2			
VFD022V23A-2	12-10 AWG (3.3-5.3mm^2)		
VFD022V43A-2	14-10 AWG (2.1-5.3mm^2)		
VFD037V23A-2	10 AWG (5.3mm^2)		
VFD037V43A-2	14-10 AWG (2.1-5.3mm^2)		

Frame C

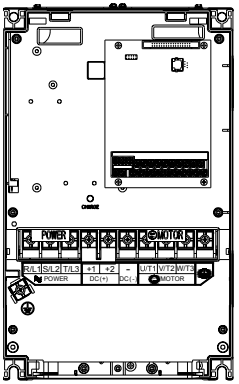


Main circuit terminals

R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, ⏚, +1, +2/B1, -, B2

Models	Wire	Torque	Wire Type
VFD055V23A-2	8 AWG (8.4mm^2)	30kgf-cm (26in-lbf)	Stranded copper only, 75 °C
VFD075V23A-2			
VFD110V43B-2			
VFD055V43A-2	12-10 AWG (3.3-5.3mm^2)		
VFD075V43A-2	10 AWG (5.3mm^2)		

Frame D



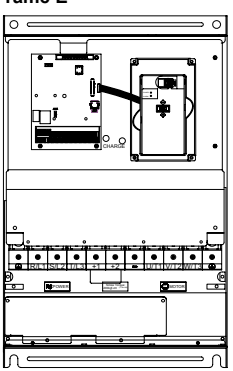
Main circuit terminals

R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, ⏚, +1, +2, -

Models	Wire	Torque	Wire Type
VFD110V23A-2	6-2 AWG (13.3-33.6mm^2)	30kgf-cm (26in-lbf)	Stranded copper only, 75 °C
VFD110V43A-2	8-2 AWG (8.4-33.6mm^2)		
VFD150V43A-2			
VFD150V23A-2	3-2 AWG (26.7-33.6mm^2)		
VFD185V23A-2	2 AWG (33.6mm^2)		
VFD185V43A-2	4-2 AWG (21.2-33.6mm^2)		
VFD220V43A-2			
VFD220V23A-2	2 AWG # (33.6mm^2)		

To connect 6 AWG (13.3 mm^2) wires, use Recognized Ring Terminals

Frame E



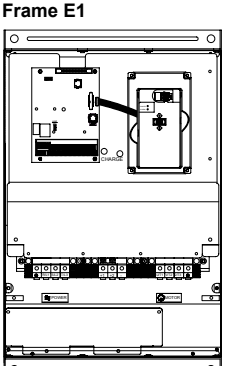
Main circuit terminals

R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, ⏚, +1, +2, -

Models	Wire	Torque	Wire Type
VFD300V43A-2	4-2 AWG (21.2-33.6mm^2)	57kgf-cm (49in-lbf)	Stranded copper only, 75 °C
VFD370V43A-2	3-2 AWG (26.7-33.6mm^2)		
VFD450V43A-2	2 AWG # (33.6mm^2)		

To connect 6 AWG (13.3 mm^2) wires, use Recognized Ring Terminals

Frame E1



Main circuit terminals

R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, ⏚, +1, +2, -

Models	Wire	Torque	Wire Type
VFD300V23A-2	1/0-4/0 AWG (53.5-107.2mm^2)	200kgf-cm (173in-lbf)	Stranded copper only, 75 °C
VFD370V23A-2			
VFD550V43C-2	3/0-4/0 AWG (85-107.2mm^2)		
VFD750V43C-2			

Summary of Parameter Settings

✓: The parameter can be set during operation.

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		Group 0 System Parameters						
00-00	Identity Code of the AC motor drive	Read-only	0	○	○	○	○	○
00-01	Rated Current Display of the AC motor drive	Read-only	0	○	○	○	○	○
00-02	Parameter Reset	0: No function 1: Read only 2: Enable group 11 parameters setting 8: Keypad lock 9: All parameters are reset to factory settings (50Hz, 220V/380V) 10: All parameters are reset to factory settings (60Hz, 220V/440V)	0	○	○	○	○	○
✓00-03	Start-up Display Selection	0: Display the frequency command value (LED F) 1: Display the actual output frequency (LED H) 2: Display the output current (A) 3: Multifunction display, see Pr.00-04	0	○	○	○	○	○
✓00-04	Content of Multi-function Display	0: Display output current (A) 1: Display counter value (C) 2: Display output frequency (H) 3: Display DC-BUS voltage ($\bar{u}$) 4: Display output voltage (E) 5: Output power factor angle (n) 6: Display output power (kW) 7: Display actual motor speed (HU) 8: Display estimate output torque (kg-m) 9: Display PG position 10: Display PID feedback 11: Display AVI (%) 12: Display ACI (%) 13: Display AUI (%) 14: Display the temperature of heat sink (°C) 15: Display the temperature of IGBT (°C) 16: The status of digital input (ON/OFF) 17: The status of digital output (ON/OFF) 18: Multi-step speed 19: The corresponding CPU pin status of digital input 20: The corresponding CPU pin status of digital output 21: Encoder position (PG1 of PG card) 22: Pulse input frequency (PG2 of PG card) 23: Pulse input position (PG2 of PG card)	0	○	○	○	○	○
✓00-05	User-Defined Coefficient K	Digit 4: decimal point number (0 to 3) Digit 0-3: 40 to 9999	0	○	○	○	○	○
00-06	Software Version	Read-only	#.##	○	○	○	○	○
✓00-07	Password Input	1 to 9998 and 10000 to 65535 0 to 2: times of wrong password	0	○	○	○	○	○
✓00-08	Password Set	1 to 9998 and 10000 to 65535 0: No password set or successful input in Pr.00-07 1: Password has been set	0	○	○	○	○	○
✓00-09	Energy Saving Gain	10~1000 %	100%				○	
00-10	Control Method	0: V/f Control 1: V/f Control + Encoder (VFPG) 2: Sensorless vector control (SVC) 3: FOC vector control + Encoder (FOCPG) 4: Torque control + Encoder (TQRPG)	0	○	○	○	○	○
00-11	V/f Curve Selection	0: V/f curve determined by group 01 1: 1.5 power curve 2: Square curve	0	○	○			
✓00-12	Constant/Variable Torque Selection	0: Constant Torque (100%) 1: Variable Torque (125%)	0	○	○	○	○	
✓00-13	Optimal Acceleration/Deceleration Setting	0: Linear accel./decel. I 1: Auto accel., linear decel. 2: Linear accel., auto decel. 3: Auto accel./decel. I 4: Stall prevention by auto accel./decel. (limited by 01-12 to 01-21)	0	○	○	○	○	
00-14	Time Unit for Acceleration/Deceleration and S Curve	0: Unit: 0.01 second 1: Unit: 0.1 second	0	○	○	○	○	
00-15	Reserved							
00-16	Reserved							

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓00-17	Carrier Frequency	1~15KHz	10	○	○	○	○	○
✓00-18	Auto Voltage Regulation (AVR) Function	0: Enable AVR 1: Disable AVR 2: Disable AVR when deceleration stop	0	○	○	○	○	○
✓00-19	Auto Energy-saving Operation	0: Disable 1: Enable	0	○	○	○	○	
✓00-20	Source of the Master Frequency Command	0: Digital keypad (KPV-CE01) 1: RS-485 serial communication 2: External analog input (Pr. 03-00) 3: External UP/DOWN terminal 4: Pulse input without direction command (Pr.10-15 without direction) 5: Pulse input with direction command (Pr.10-15)	0	○	○	○	○	
✓00-21	Source of the Operation Command	0: Digital keypad (KPV-CE01) 1: External terminals. Keypad STOP disabled. 2: RS-485 serial communication (RJ-11). Keypad STOP disabled.	0	○	○	○	○	○
✓00-22	Stop Method	0: Ramp to stop 1: Coast to stop	0	○	○	○	○	○
✓00-23	Reverse Operation	0: Enable reverse 1: Disable reverse 2: Disable forward	0	○	○	○	○	○
		Group 1 Basic Parameters						
01-00	Maximum Output Frequency	50.00~600.00Hz	60.00/ 50.00	○	○	○	○	○
01-01	1st Output Frequency Setting 1	0.00~600.00Hz	60.00/ 50.00	○	○	○	○	○
01-02	1st Output Voltage Setting 1	230V: 0.1V~255.0V 460V: 0.1V~510.0V	220.0 440.0	○	○	○	○	○
01-03	2nd Output Frequency Setting 1	0.00~600.00Hz	0.50	○	○			
01-04	2nd Output Voltage Setting 1	230V: 0.1V~255.0V 460V: 0.1V~510.0V	5.0 10.0	○	○			
01-05	3rd Output Frequency Setting 1	0.00~600.00Hz	0.50	○	○			
01-06	3rd Output Voltage Setting 1	230V: 0.1V~255.0V 460V: 0.1V~510.0V	5.0 10.0	○	○			
01-07	4th Output Frequency Setting 1	0.00~600.00Hz	0.00	○	○	○	○	○
01-08	4th Output Voltage Setting 1	230V: 0.1V~255.0V 460V: 0.1V~510.0V	0.0 0.0	○	○			
01-09	Start Frequency	0.00~600.00Hz	0.50	○	○	○	○	
✓01-10	Output Frequency Upper Limit	0.00~600.00Hz	600.00	○	○	○	○	
✓01-11	Output Frequency Lower Limit	0.00~600.00Hz	0.00	○	○	○	○	
✓01-12	Accel Time 1	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-13	Decel Time 1	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-14	Accel Time 2	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-15	Decel Time 2	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-16	Accel Time 3	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-17	Decel Time 3	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-18	Accel Time 4	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-19	Decel Time 4	0.00~600.00 sec/0.00~6000.0 sec	10.00/ 10.0	○	○	○	○	
✓01-20	JOG Acceleration Time	0.00~600.00 sec/0.00~6000.0 sec	1.00/ 1.0	○	○	○	○	
✓01-21	JOG Deceleration Time	0.00~600.00 sec/0.00~6000.0 sec	1.00/ 1.0	○	○	○	○	
✓01-22	JOG Frequency	0.00~600.00Hz	6.00	○	○	○	○	○
✓01-23	1st/4th Accel/decel Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓01-24	S-curve for Acceleration Departure Time 1	0.00~25.00 sec/0.00~250.0 sec	0.2/0.0	○	○	○	○	
✓01-25	S-curve for Acceleration Arrival Time 2	0.00~25.00 sec /0.00~250.0 sec	0.2/0.0	○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓01-26	S-curve for Deceleration Departure Time 1	0.00~25.00 sec /0.00~250.0 sec	0.2/0.0	○	○	○	○	
✓01-27	S-curve for Deceleration Arrival Time 2	0.00~25.00 sec /0.00~250.0 sec	0.2/0.0	○	○	○	○	
01-28	Skip Frequency 1 (upper limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-29	Skip Frequency 1 (lower limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-30	Skip Frequency 2 (upper limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-31	Skip Frequency 2 (lower limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-32	Skip Frequency 3 (upper limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-33	Skip Frequency 3 (lower limit)	0.00~600.00Hz	0.00	○	○	○	○	
01-34	Zero-speed Mode Selection	0: Output Waiting 1: Zero-speed operation 2: Fmin (4th output frequency setting)	0	○	○	○		
01-35	1st Output Frequency Setting 2	0.00~600.00Hz	60.00/ 50.00	○	○	○	○	○
01-36	1st Output Voltage Setting 2	230V: 0.1V~255.0V 460V: 0.1V~510.0V	220.0 440.0	○	○	○	○	○
01-37	2nd Output Frequency Setting 2	0.00~600.00Hz	0.50	○	○			
01-38	2nd Output Voltage Setting 2	230V: 0.1V~255.0V 460V: 0.1V~510.0V	5.0/ 10.0	○	○			
01-39	3rd Output Frequency Setting 2	0.00~600.00Hz	0.50	○	○			
01-40	3rd Output Voltage Setting 2	230V: 0.1V~255.0V 460V: 0.1V~510.0V	5.0/ 10.0	○	○			
01-41	4th Output Frequency Setting 2	0.00~600.00Hz	0.00	○	○	○	○	○
01-42	4th Output Voltage Setting 2	230V: 0.1V~255.0V 460V: 0.1V~510.0V	0.0/ 0.0	○	○			
	Group 2 Digital Input/Output Parameters							
02-00	2-wire/3-wire Operation Control	0: FWD/STOP, REV/STOP 1: FWD/STOP, REV/STOP (Line Start Lockout) 2: RUN/STOP, REV/FWD 3: RUN/STOP, REV/FWD (Line Start Lockout) 4: 3-wire (momentary push button) 5: 3-wire (momentary push button and Line Start Lockout)	0	○	○	○	○	○
02-01	Multi-Function Input Command 1 (MI1) (it is Stop terminal for 3-wire operation)	0: no function	1	○	○	○	○	○
		1: multi-step speed command 1/multi-step position command 1		○	○	○	○	
		2: multi-step speed command 2/ multi-step position command 2		○	○	○	○	
02-02	Multi-Function Input Command 2 (MI2)	3: multi-step speed command 3/ multi-step position command 3	2	○	○	○	○	
		4: multi-step speed command 4/ multi-step position command 4		○	○	○	○	
02-03	Multi-Function Input Command 3 (MI3)	5: Reset	3	○	○	○	○	○
		6: JOG command		○	○	○	○	
02-04	Multi-Function Input Command 4 (MI4)	7: acceleration/deceleration speed inhibit	4	○	○	○	○	
		8: the 1st, 2nd acceleration/deceleration time selection		○	○	○	○	
02-05	Multi-Function Input Command 5 (MI5)	9: the 3rd, 4th acceleration/deceleration time selection	0	○	○	○	○	
		10: EF input (07-36)		○	○	○	○	○
02-06	Multi-Function Input Command 6 (MI6) (specific terminal for TRG)	11: B.B. input	0	○	○	○	○	○
		12: Output stop		○	○	○	○	○
02-23	Multi-Function Input Command 7 (MI7)	13: cancel the setting of the optimal acceleration/deceleration time	0	○	○	○	○	
02-24	Multi-Function Input Command 8 (MI8)	14: switch between drive settings 1 and 2	0	○	○	○	○	
02-25	Multi-Function Input Command 9 (MI9)	15: operation speed command form AVI	0	○	○	○	○	
02-26	Multi-Function Input Command 10 (MI10)	16: operation speed command form ACI	0	○	○	○	○	
02-27	Multi-Function Input Command 11 (MI11)	17: operation speed command form AUI	0	○	○	○	○	
02-28	Multi-Function Input	18: Emergency Stop (07-36)	0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
	Command 12 (MI12)							
02-29	Multi-Function Input Command 13 (MI13)	19: Digital Up command	0	○	○	○	○	
02-30	Multi-Function Input Command 14 (MI14)	20: Digital Down command	0	○	○	○	○	
		21: PID function disabled		○	○	○	○	
		22: clear counter		○	○	○	○	○
		23: input the counter value (multi-function input command 6)		○	○	○	○	○
		24: FWD JOG command		○	○	○	○	
		25: REV JOG command		○	○	○	○	
		26: TQC+PG/FOC+PG model selection					○	○
		27: ASR1/ASR2 selection			○		○	
		28: Emergency stop (EF1)		○	○	○	○	○
		29: Signal confirmation for Y-connection		○	○	○	○	
		30: Signal confirmation for Δ-connection		○	○	○	○	
		31: High torque bias (by Pr.07-29)		○	○	○	○	○
		32: Middle torque bias (by Pr.07-30)		○	○	○	○	○
		33: Low torque bias (by Pr.07-31)		○	○	○	○	○
		34: Enable multi-step position control			○		○	
		35: Enable position control			○		○	
		36: Enable multi-step position input			○		○	
		37: Enable pulse position input command			○		○	
		38: Disable write EEPROM function		○	○	○	○	○
		39: Torque command direction						○
		40: Force stop		○	○	○	○	○
		41: Serial position clock					○	
		42: Serial position input					○	
		43: Analog input resolution selection		○	○	○	○	
✓02-07	UP/DOWN Key Mode	0: up/down by the accel/decel time 1: up/down constant speed (Pr.02-08)	0	○	○	○	○	
✓02-08	The Acceleration/Deceleration Speed of the UP/DOWN Key with Constant Speed	0.01 ~ 1.00Hz/ms	0.01	○	○	○	○	
✓02-09	Digital Input Response Time	0.001~ 30.000 sec	0.005	○	○	○	○	○
✓02-10	Digital Input Operation Direction	0 ~ 65535	0	○	○	○	○	○
✓02-11	Multi-function Output 1 RA, RB, RC(Relay1)	0: No function	11	○	○	○	○	○
		1: Operation indication		○	○	○	○	○
✓02-12	Multi-function Output 2 MRA, MRC (Relay2)	2: Operation speed attained	1	○	○	○	○	○
		3: Desired frequency attained 1 (Pr.02-19)		○	○	○	○	○
✓02-13	Multi-function Output 3 (MO1)	4: Desired frequency attained 2 (Pr.02-21)	0	○	○	○	○	
		5: Zero speed (frequency command)		○	○	○	○	
		6: Zero speed with stop (frequency command)		○	○	○	○	
		7: Over torque (OT1) (Pr.06-06~06-08)		○	○	○	○	○
		8: Over torque (OT2) (Pr.06-09~06-11)		○	○	○	○	○
✓02-14	Multi-function Output 4 (MO2)	9: Drive ready	0	○	○	○	○	○
		10: User-defined Low-voltage Detection		○	○	○	○	○
		11: Malfunction indication		○	○	○	○	○
		12: Mechanical brake release (Pr.02-31)		○	○	○	○	
		13: Overheat		○	○	○	○	○
		14: Software braking signal		○	○	○	○	○
		15: PID feedback error		○	○	○	○	○
		16: Slip error (oSL)		○	○	○	○	
		17: Terminal count value attained (Pr.02-16)		○	○	○	○	○
		18: Preliminary count value attained (Pr.02-17)		○	○	○	○	○
		19: Baseblock (B.B.) Indication		○	○	○	○	○
		20: Warning output		○	○	○	○	○
		21: Over voltage warning		○	○	○	○	○
		22: Over-current stall prevention warning		○	○	○	○	○
		23: Over-voltage stall prevention warning		○	○	○		
		24: Operation mode indication		○	○	○	○	○
		25: Forward command		○	○	○	○	
		26: Reverse command		○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		27: Output when current >= Pr.02-32		○	○	○	○	○
		28: Output when current < Pr.02-32		○	○	○	○	○
		29: Output when frequency >= Pr.02-33		○	○	○	○	○
		30: Output when frequency < Pr.02-33		○	○	○	○	○
		31: Y-connection for the motor coil		○	○	○	○	
		32: Δ connection for the motor coil		○	○	○	○	
		33: Zero speed (actual output frequency)		○	○	○	○	
		34: Zero speed with 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)		○	○	○	○	○
		39: Position attained (Pr.10-19)					○	
		40: Speed attained (including zero speed)		○	○	○	○	
✓02-15	Multi-output Direction	0 ~ 65535	0	○	○	○	○	○
✓02-16	Terminal Count Value	0 ~ 65535	0	○	○	○	○	○
✓02-17	Preliminary Counter Value	0 ~ 65535	0	○	○	○	○	○
✓02-18	Digital Output Gain	1 ~ 40	1	○	○	○	○	○
✓02-19	Desired Frequency Attained 1	0.00 ~ 600.00Hz	60.00/ 50.00	○	○	○	○	
✓02-20	The Width of the Desired Frequency Attained 1	0.00 ~ 600.00Hz	2.00	○	○	○	○	
✓02-21	Desired Frequency Attained 2	0.00 ~ 600.00Hz	60.00/ 50.00	○	○	○	○	
✓02-22	The Width of the Desired Frequency Attained 2	0.00 ~ 600.00Hz	2.00	○	○	○	○	
02-31	Brake Delay Time	0.000~65.000 Sec	0	○	○	○	○	○
✓02-32	Output Current Level Setting for External Terminals	0~100%	0	○	○	○	○	○
✓02-33	Output Boundary for External Terminals	0.00~+-60.00Hz (it is motor speed when using PG)	0.00	○	○	○	○	○
✓02-34	External Operation Control Selection after Reset	0: Disable 1: Drive runs if run command exists after reset	0	○	○	○		
		Group 3 Analog Input/Output Parameters						
✓03-00	Analog Input 1 (AVI)	0: No function	1	○	○	○	○	○
✓03-01	Analog Input 2 (ACI)	1: Frequency command (torque limit under TQR control mode)	0	○	○	○	○	○
✓03-02	Analog Input 3 (AUI)	2: torque command (torque limit under speed mode)	0					○
		3: Torque compensation command		○	○	○	○	○
		4: PID target value (refer to group 8)		○	○	○	○	
		5: PID feedback signal (refer to group 8)		○	○	○	○	
		6: P.T.C.thermistor input value		○	○	○	○	○
		7: Positive torque limit					○	
		8: Negative torque limit					○	
		9: Regenerative torque limit					○	
		10: Positive/negative torque limit					○	
✓03-03	Analog Input Bias 1 (AVI)	-100.0~100.0%	0	○	○	○	○	○
✓03-04	Analog Input Bias 2 (ACI)	-100.0~100.0%	0	○	○	○	○	○
✓03-05	Analog Input Bias 3 (AUI)	-100.0~100.0%	0	○	○	○	○	○
✓03-06	Positive/negative Bias Mode (AVI)	0: Zero bias 1: Lower than bias=bias 2: Greater than bias=bias 3: The absolute value of the bias voltage while serving as the center 4: Serve bias as the center	0	○	○	○	○	○
✓03-07	Positive/negative Bias Mode (ACI)		0	○	○	○	○	○
✓03-08	Positive/negative Bias Mode (AUI)		0	○	○	○	○	○
✓03-09	Analog Input Gain 1 (AVI)	-500.0~500.0%	100.0	○	○	○	○	○
✓03-10	Analog Input Gain 2 (ACI)	-500.0~500.0%	100.0	○	○	○	○	○
✓03-11	Analog Input Gain 3 (AUI)	-500.0~500.0%	100.0	○	○	○	○	○
✓03-12	ACI/AVI2 Selection	0: ACI 1: AVI 2	0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓03-13	Analog Input Delay Time (AVI)	0.00~2.00 sec	0.01	○	○	○	○	○
✓03-14	Analog Input Delay Time (ACI)	0.00~2.00 sec	0.01	○	○	○	○	○
✓03-15	Analog Input Delay Time (AUI)	0.00~2.00 sec	0.01	○	○	○	○	○
✓03-16	Addition Function of the Analog Input	0: Disable (AVI, ACI, AUI) 1: Enable	0	○	○	○	○	○
✓03-17	Loss of the ACI Signal	0: Disable 1: Continue operation at the last frequency 2: Decelerate to stop 3: Stop immediately and display E.F.	0	○	○	○	○	○
✓03-18	Analog Output Selection	0: Output frequency (Hz)	0	○	○	○	○	○
		1: Frequency command (Hz)		○	○	○	○	○
		2: Motor speed (Hz)		○	○	○	○	○
		3: Output current (rms)		○	○	○	○	○
		4: Output voltage		○	○	○	○	○
		5: DC Bus Voltage		○	○	○	○	○
		6: Power factor		○	○	○	○	○
		7: Power		○	○	○	○	○
		8: Output torque		○	○	○	○	○
		9: AVI		○	○	○	○	○
		10: ACI		○	○	○	○	○
		11: AUI		○	○	○	○	○
		12: q-axis current		○	○	○	○	○
		13: q-axis feedback value		○	○	○	○	○
		14: d-axis current		○	○	○	○	○
		15: d-axis feedback value		○	○	○	○	○
		16: q-axis voltage		○	○	○	○	○
		17: d-axis voltage 18: Torque command		○ ○	○ ○	○ ○	○ ○	○ ○
		19: Pulse frequency command		○	○	○	○	○
✓03-19	Analog Output Gain	0~200.0%	100.0	○	○	○	○	○
✓03-20	Analog Output Value in REV Direction	0: Absolute value in REV direction 1: Output 0V in REV direction 2: Output negative voltage in REV direction	0	○	○	○	○	○
		Group 4 Multi-Step Speed Parameters						
✓04-00	1st Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-01	2nd Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-02	3rd Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-03	4th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-04	5th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-05	6th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-06	7th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-07	8th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-08	9th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-09	10th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-10	11th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-11	12th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-12	13th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-13	14th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-14	15th Step Speed Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓04-15	Multi-position 1	0~65535	0		○		○	
✓04-16	Multi-position 2	0~65535	0		○		○	
✓04-17	Multi-position 3	0~65535	0		○		○	
✓04-18	Multi-position 4	0~65535	0		○		○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓04-19	Multi-position 5	0~65535	0		○		○	
✓04-20	Multi-position 6	0~65535	0		○		○	
✓04-21	Multi-position 7	0~65535	0		○		○	
✓04-22	Multi-position 8	0~65535	0		○		○	
✓04-23	Multi-position 9	0~65535	0		○		○	
✓04-24	Multi-position 10	0~65535	0		○		○	
✓04-25	Multi-position 11	0~65535	0		○		○	
✓04-26	Multi-position 12	0~65535	0		○		○	
✓04-27	Multi-position 13	0~65535	0		○		○	
✓04-28	Multi-position 14	0~65535	0		○		○	
✓04-29	Multi-position 15	0~65535	0		○		○	
		Group 5 Motor Parameters						
05-00	Motor Auto Tuning	0: No function 1: Rolling test 2: Static Test 3: Static Test (Shaft locked axis-3 phase)	0			○	○	○
05-01	Full-load Current of Motor 1	40-100%	90%	○	○	○	○	○
✓05-02	Rated power of Motor 1	0~655.35	#.##			○	○	○
✓05-03	Rated speed of Motor 1 (rpm)	0~65535	1710		○	○	○	○
05-04	Number of Motor Poles 1	2~20	4	○	○	○	○	○
05-05	No-load Current of Motor 1	0-100%	40%		○	○	○	○
05-06	Rotor Resistance R1 of Motor 1	0~65.535Ω	0.000			○	○	○
05-07	Rr of Motor 1	0~65.535Ω	0.000			○	○	○
05-08	Lm of Motor 1	0~6553.5mH	0.0			○	○	○
05-09	Lx of Motor 1	0~6553.5mH	0.0			○	○	○
05-10	Motor 1/Motor 2 Selection	1: Motor 1 2: Motor 2	1	○	○	○	○	○
✓05-11	Frequency for Y-connection/ Δ-connection Switch	0.00~600.00Hz	60.00	○	○	○	○	
05-12	Y-connection /Δ-connection Switch	0: Disable 1: Enable	0	○	○	○	○	
05-13	Full-load Current of Motor 2	40-100%	90%	○	○	○	○	○
✓05-14	Rated Power of Motor 2	0~655.35	#.##			○	○	○
✓05-15	Rated Speed of Motor 2 (rpm)	0~65535	1710		○	○	○	○
05-16	Number of Motor Poles 2	2~20	4	○	○	○	○	○
05-17	No-load Current of Motor 2	0-100%	40%		○	○	○	○
05-18	Rs of Motor 2	0~65.535Ω	0.000			○	○	○
05-19	Rr of Motor 2	0~65.535Ω	0.000			○	○	○
05-20	Lm of Motor 2	0~6553.5mH	0.0			○	○	○
05-21	Lx of Motor 2	0~6553.5mH	0.0			○	○	○
✓05-22	Torque Compensation Time Constant	0.001~10.000sec	0.020			○		
✓05-23	Slip Compensation Time Constant	0.001~10.000sec	0.100			○		
✓05-24	Torque Compensation Gain	0~10	0	○	○			
✓05-25	Slip Compensation Gain	0.00~10.00	0.00	○	○			
✓05-26	Slip Deviation Level	0~1000% (0: disable)	0		○	○	○	
✓05-27	Detection Time of Slip Deviation	0.0~10.0 sec	1.0		○	○	○	
✓05-28	Over Slip Treatment	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop	0		○	○	○	
✓05-29	Hunting Gain	0~10000 (0: disable)	2000	○	○	○		

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓05-30	Delay Time for Y-connection/Δ –connection	0~60.000 sec	0.200	○	○	○	○	
05-31	Accumulative Motor Operation Time (Min.)	00~1439	0	○	○	○	○	○
05-32	Accumulative Motor Operation Time (day)	00~65535	0	○	○	○	○	○
		Group 6 Protection Parameters						
✓06-00	Low Voltage Level	160.0~220.0Vdc	180.0	○	○	○	○	○
		320.0~440.0Vdc	360.0	○	○	○	○	○
✓06-01	Over-voltage Stall Prevention	350.0~450.0Vdc	380.0	○	○	○	○	○
		700.0~900.0Vdc	760.0	○	○	○	○	○
✓06-02	Phase-loss Protection	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop	0	○	○	○	○	○
✓06-03	Over-current Stall Prevention during Acceleration	00~250%	170	○	○	○		
✓06-04	Over-current Stall Prevention during Operation	00~250%	170	○	○	○		
✓06-05	Accel./Decel. Time Selection of Stall Prevention at constant speed	0: by current accel/decel time 1: by the 1st accel/decel time 2: by the 2nd accel/decel time 3: by the 3rd accel/decel time 4: by the 4th accel/decel time 5: by auto accel/decel time	0	○	○	○		
✓06-06	Over-torque Detection Selection (OT1)	0: disable 1: over-torque detection during constant speed operation, continue to operate after detection 2: over-torque detection during constant speed operation, stop operation after detection 3: over-torque detection during operation, continue to operate after detection 4: over-torque detection during operation, stop operation after detection	0	○	○	○	○	○
✓06-07	Over-torque Detection Level (OT1)	10~250%	150	○	○	○	○	○
✓06-08	Over-torque Detection Time (OT1)	0.0~60.0 sec	0.1	○	○	○	○	○
✓06-09	Over-torque Detection Selection (OT2)	0: disable 1: over-torque detection during constant speed operation, continue to operate after detection 2: over-torque detection during constant speed operation, stop operation after detection 3: over-torque detection during operation, continue to operate after detection 4: over-torque detection during operation, stop operation after detection	0	○	○	○	○	○
✓06-10	Over-torque Detection Level (OT2)	10~250%	150	○	○	○	○	○
✓06-11	Over-torque Detection Time (OT2)	0.0~60.0 sec	0.1	○	○	○	○	○
✓06-12	Current Limit	0~250%	150				○	○
✓06-13	Electronic Thermal Relay Selection (Motor 1)	0: Inverter motor 1: Special motor 2: Disable	2	○	○	○	○	○
✓06-14	Electronic Thermal Characteristic for Motor 1	30.0~600.0 sec	60.0	○	○	○	○	○
✓06-15	Heat Sink Over-heat (OH) Warning	0.0~110.0°C	85.0	○	○	○	○	○
✓06-16	Stall Prevention Limit Level	0~100% (refer to Pr.06-03, Pr.06-04)	50	○	○	○		
06-17	Present Fault Record	0: No fault 1: Over-current during acceleration (ocA) 2: Over-current during deceleration (ocd) 3: Over-current during constant speed (ocn) 4: Ground fault (GFF) 5: IGBT short-circuit (occ) 6: Over-curent at stop (ocS) 7: Over-voltage during acceleration (ovA) 8: Over-voltage during deceleration (ovd)	0	○	○	○	○	○
06-18	Second Most Recent Fault Record		0	○	○	○	○	○
06-19	Third Most Recent Fault Record		0	○	○	○	○	○
06-20	Fourth Most Recent Fault Record		0	○	○	○	○	○
06-21	Fifth Most Recent Fault Record		0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
06-22	Sixth Most Recent Fault Record	9: Over-voltage during constant speed (ovn) 10: Over-voltage at stop (ovS) 11: Low-voltage during acceleration (LvA) 12: Low-voltage during deceleration (Lvd) 13: Low-voltage during constant speed (Lvn) 14: Low-voltage at stop (LvS) 15: Phase loss (PHL) 16: IGBT heat sink over-heat (oH1) 17: Heat sink over-heat (oH2)(for 40HP above) 18: TH1 open loop error (tH1o) 19: TH2 open loop error (tH2o) 20: Fan error signal output 21: over-load (oL) (150% 1Min) 22: Motor 1 over-load (EoL1) 23: Motor 2 over-load (EoL2) 24: Motor PTC overheat (oH3) 25: Fuse error (FuSE) 26: over-torque 1 (ot1) 27: over-torque 1 (ot2) 28: Insufficient torque 1 29: Insufficient torque 2 30: Memory write-in error (cF1) 31: Memory read-out error (cF2) 32: Isum current detection error (cd0) 33: U-phase current detection error (cd1) 34: V-phase current detection error (cd2) 35: W-phase current detection error (cd3) 36: Clamp current detection error (Hd0) 37: Over-current detection error (Hd1) 38: Over-voltage detection error (Hd2) 39: Ground current detection error (Hd3) 40: Auto tuning error (AuE) 41: PID feedback loss (AFE) 42: PG feedback error (PGF1) 43: PG feedback loss (PGF2) 44: PG feedback stall (PGF3) 45: PG slip error (PGF4) 46: PG ref input error (PGr1) 47: PG ref loss (PGr2) 48: Analog current input loss (ACE) 49: External fault input (EF) 50: Emergency stop (EF1) 51: External Base Block (B.B.) 52: Password error (PcodE) 53: Software error (ccodE) 54: Communication error (cE1) 55: Communication error (cE2) 56: Communication error (cE3) 57: Communication error (cE4) 58: Communication Time-out (cE10) 59: PU time-out (cP10) 60: Brake transistor error (bF) 61: Y-connection/Δ-connection switch error (ydc) 62: Decel. Energy Backup Error (dEb)	0	○	○	○	○	○
✓06-23	Fault Output Option 1	0~65535 (refer to bit table for fault code)	0	○	○	○	○	○
✓06-24	Fault Output Option 2	0~65535 (refer to bit table for fault code)	0	○	○	○	○	○
✓06-25	Fault Output Option 3	0~65535 (refer to bit table for fault code)	0	○	○	○	○	○
✓06-26	Fault Output Option 4	0~65535 (refer to bit table for fault code)	0	○	○	○	○	○
✓06-27	Electronic Thermal Relay Selection (Motor 2)	0: Inverter motor 1: Special motor 2: Disable	2	○	○	○	○	○
✓06-28	Electronic Thermal Characteristic for Motor 2	30.0~600.0 sec	60.0	○	○	○	○	○
✓06-29	PTC (Positive Temperature Coefficient) Detection Selection	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop	0	○	○	○	○	○
✓06-30	PTC Level	0.0~100.0%	50.0	○	○	○	○	○
✓06-31	Filter Time for PTC Detection	0.00~10.00sec	0.20	○	○	○	○	○
		Group 7 Special Parameters						
✓07-00	Software Braking Level	230V: 350.0~450.0Vdc 460V: 700.0~900.0Vdc	380.0 760.0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓07-01	DC Braking Current Level	0~100%	0				○	○
✓07-02	DC Braking Time during Start-up	0.0~60.0 sec	0.0				○	○
✓07-03	DC Braking Time during Stopping	0.0~60.0 sec	0.0				○	○
✓07-04	Start-point for DC Braking	0.00~600.00Hz	0.00	○	○	○		
07-05	DC Braking Voltage Gain	1~500	50	○	○	○		
✓07-06	Momentary Power Loss Operation Selection	0: Operation stop after momentary power loss 1: Operation continues after momentary power loss, speed search starts with the Master Frequency reference value 2: Operation continues after momentary power loss, speed search starts with the minimum frequency	0	○	○	○	○	○
✓07-07	Maximum Allowable Power Loss Time	0.1~5.0 sec	2.0	○	○	○	○	○
✓07-08	B.B. Time for Speed Search	0.1~5.0 sec	0.5	○	○	○	○	○
✓07-09	Current Limit for Speed Search	20~200%	150	○	○	○	○	○
✓07-10	Base-block Speed Search	0: Stop operation 1: Speed search starts with last frequency command 2: Speed search starts with minimum output frequency	0	○	○	○	○	○
✓07-11	Auto Restart after Fault	0~10	0	○	○	○	○	○
✓07-12	Speed Search during Start-up	0: Disable 1: Speed search from maximum frequency 2: Speed search from start-up frequency 3: Speed search from minimum frequency	0	○	○	○	○	
✓07-13	Decel. Time Selection for Momentary Power Loss	0: Disable 1: 1st decel. time 2: 2nd decel. time 3: 3rd decel. time 4: 4th decel. time 5: Current decel. time 6: Auto decel. Time	0	○	○	○	○	○
✓07-14	DEB Return Time	0.0~25.0 sec	0.0	○	○	○	○	
✓07-15	Dwell Time at Accel.	0.00~600.00sec	0.00	○	○	○	○	
✓07-16	Dwell Frequency at Accel.	0.00~600.00Hz	0.00	○	○	○	○	
✓07-17	Dwell Time at Decel.	0.00~600.00sec	0.00	○	○	○	○	
✓07-18	Dwell Frequency at Decel.	0.00~600.00Hz	0.00	○	○	○	○	
✓07-19	Fan Control	0: Fan always ON 1: 1 minute after AC motor drive stops, fan will be OFF 2: AC motor drive runs and fan ON, AC motor drive stops and fan OFF 3: Fan ON to run when preliminary heat sink temperature attained 4: Fan always OFF	0	○	○	○	○	○
✓07-20	Torque Command	-100.0~100.0% (Pr. 07-22 setting=100%)	0.0					○
✓07-21	Torque Command Source	0: Digital keypad 1: RS485 serial communication (RJ-11) 2: Analog signal (Pr.03-00)	0					○
✓07-22	Maximum Torque Command	0~500%	100	○	○	○	○	○
✓07-23	Filter Time of Torque Command	0.000~1.000 sec	0.000					○
07-24	Speed Limit Selection	0: By Pr.07-25 and Pr.07-26 1: Frequency command source (Pr.00-20)	0					○
✓07-25	Torque Mode +Speed Limit	0~120%	10					○
✓07-26	Torque Mode-Speed Limit	0~120%	10					○
✓07-27	Source of Torque Offset	0: Disable 1: Analog input (Pr.03-00) 2: Torque offset setting 3: Control by external terminal (by Pr.07-29 to Pr.07-31)	0			○	○	○
✓07-28	Torque Offset Setting	0.0~100.0%	0.0			○	○	○
✓07-29	High Torque Offset	0.0~100.0%	30.0			○	○	○
✓07-30	Middle Torque Offset	0.0~100.0%	20.0			○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓07-31	Low Torque Offset	0.0~100.0%	10.0			○	○	○
✓07-32	Forward Motor Torque Limit	0~500%	200				○	○
✓07-33	Forward Regenerative Torque Limit	0~500%	200				○	○
✓07-34	Reverse Motor Torque Limit	0~500%	200				○	○
✓07-35	Reverse Regenerative Torque Limit	0~500%	200				○	○
✓07-36	Emergency Stop (EF) & Forced Stop Selection	0: Coast stop 1: By deceleration Time 1 2: By deceleration Time 2 3: By deceleration Time 3 4: By deceleration Time 4 5: System Deceleration 6: Automatic Deceleration	0	○	○	○	○	○
Group 8 High-function PID Parameters								
✓08-00	Input Terminal for PID Feedback	0: No function 1: Positive PID feedback from external terminal AVI (Pr.03-00) 2: Positive PID feedback from PG card (Pr.10-15, skip direction) 3: Positive PID feedback from PG card (Pr.10-15) 4: Negative PID feedback from external terminal AVI (Pr.03-00) 5: Negative PID feedback from PG card (Pr.10-15, skip direction) 6: Negative PID feedback from PG card (Pr.10-15)	0	○	○	○	○	
✓08-01	Proportional Gain (P)	0.0~500.0%	80.0	○	○	○	○	
✓08-02	Integral Gain (I)	0.00~100.00 sec	1.00	○	○	○	○	
✓08-03	Derivative Control (D)	0.00~1.00 sec	0.00	○	○	○	○	
✓08-04	Upper limit for Integral Control	0.0~100.0%	100.0	○	○	○	○	
✓08-05	PID Output Frequency Limit	0.0~110.0%	100.0	○	○	○	○	
✓08-06	PID Offset	-100.0~+100.0%	0.0	○	○	○	○	
✓08-07	PID Delay Time	0.0~2.5 sec	0.0	○	○	○	○	
✓08-08	Feedback Signal Detection Time	0.0~3600.0 sec	0.0	○	○	○	○	
✓08-09	Feedback Fault Treatment	0: Warn and keep operating 1: Warn and ramp to stop 2: Warn and coast to stop 3: Warn and keep at last frequency	0	○	○	○	○	
✓08-10	Sleep Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓08-11	Wake-up Frequency	0.00~600.00Hz	0.00	○	○	○	○	
✓08-12	Sleep Time	0.0~6000.0 sec	0.0	○	○	○	○	
✓08-13	PID Deviation Level	1.0~50.0%	10.0	○	○	○	○	
✓08-14	PID Deviation Time	0.1~300.0 sec	5.0	○	○	○	○	
✓08-15	Filter Time for PID Feedback	0.1~300.0 sec	5.0	○	○	○	○	
Group 9 Communication Parameters								
✓09-00	Communication Address	1~254	1	○	○	○	○	○
✓09-01	COM1 Transmission Speed	4.8~115.2Kbps	9.6	○	○	○	○	○
✓09-02	COM1 Transmission Fault Treatment	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop 3: No warning and keep operation	3	○	○	○	○	○
✓09-03	COM1 Time-out Detection	0.0~100.0 sec	0.0	○	○	○	○	○
✓09-04	COM1 Communication Protocol	0: 7N1 (ASCII) 1: 7N2 (ASCII) 2: 7E1 (ASCII) 3: 7O1 (ASCII) 4: 7E2 (ASCII) 5: 7O2 (ASCII) 6: 8N1 (ASCII) 7: 8N2 (ASCII) 8: 8E1 (ASCII)	1	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		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)						
✓09-05	COM2 Transmission Speed (Keypad)	4.8~115.2Kbps	9.6	○	○	○	○	○
✓09-06	COM2 Transmission Fault Treatment (Keypad)	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop 3: No warning and keep operation	0	○	○	○	○	○
✓09-07	COM2 Time-out Detection (Keypad)	0.0~100.0 sec	1.0	○	○	○	○	○
✓09-08	COM2 Communication Protocol (Keypad)	0: 7N1 (ASCII) 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)	13	○	○	○	○	○
✓09-09	Response Delay Time	0.0~200.0ms	2.0	○	○	○	○	○
✓09-10	Transmission Master Frequency	0.00~600.00Hz	60.00	○	○	○	○	
✓09-11	Block Transfer 1	0~65535	0	○	○	○	○	○
✓09-12	Block Transfer 2	0~65535	0	○	○	○	○	○
✓09-13	Block Transfer 3	0~65535	0	○	○	○	○	○
✓09-14	Block Transfer 4	0~65535	0	○	○	○	○	○
✓09-15	Block Transfer 5	0~65535	0	○	○	○	○	○
✓09-16	Block Transfer 6	0~65535	0	○	○	○	○	○
✓09-17	Block Transfer 7	0~65535	0	○	○	○	○	○
✓09-18	Block Transfer 8	0~65535	0	○	○	○	○	○
✓09-19	Block Transfer 9	0~65535	0	○	○	○	○	○
✓09-20	Block Transfer 10	0~65535	0	○	○	○	○	○
Group 10 Speed Feedback Control Parameters								
10-00	Encoder Pulse	1~20000	600		○		○	○
10-01	Encoder Input Type Setting	0: Disable 1: Phase A leads in a forward run command and phase B leads in a reverse run command 2: Phase B leads in a forward run command and phase A leads in a reverse run command 3: Phase A is a pulse input and phase B is a direction input. (low input=reverse direction, high input=forward direction) 4: Phase A is a pulse input and phase B is a direction input. (low input=forward direction, high input=reverse direction) 5: Single-phase input	0		○		○	○
✓10-02	PG Feedback Fault Treatment	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop	2		○		○	○
✓10-03	Detection Time for PG Feedback Fault	0.00~10.0 sec	1.0		○		○	○
✓10-04	ASR (Auto Speed Regulation) Control (P) 1	0.0~1000.0%	100.0		○		○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓10-05	ASR (Auto Speed Regulation) Control (I) 1	0.000~10.000 sec	0.100		○		○	○
✓10-06	ASR (Auto Speed Regulation) Control (P) 2	0.0~1000.0%	100.0		○		○	○
✓10-07	ASR (Auto Speed Regulation) Control (I) 2	0.000~10.000 sec	0.100		○		○	○
✓10-08	ASR 1/ASR2 Switch Frequency	0.00~600.00Hz (0: disable)	7.00				○	○
✓10-09	ASR Primary Low Pass Filter Gain	0.000~0.350 sec	0.008				○	○
✓10-10	PG Stall Level	0~120% (0: disable)	115		○	○	○	
✓10-11	PG Stall Detection Time	0.0~2.0 sec	0.1		○	○	○	
✓10-12	PG Slip Range	0~50% (0: disable)	10		○	○	○	
✓10-13	PG Slip Detection Time	0.0~10.0 sec	0.5		○	○	○	
✓10-14	PG Stall and Slip Error Treatment	0: Warn and keep operation 1: Warn and ramp to stop 2: Warn and coast to stop	2		○	○	○	
✓10-15	Pulse Input Type Setting	0: Disable 1: Phase A leads in a forward run command and phase B leads in a reverse run command 2: Phase B leads in a forward run command and phase A leads in a reverse run command 3: Phase A is a pulse input and phase B is a direction input. (low input=reverse direction, high input=forward direction) 4: Phase A is a pulse input and phase B is a direction input. (low input=forward direction, high input=reverse direction)	0	○	○	○	○	○
✓10-16	Output Setting for Frequency Division (denominator)	1~255	1		○		○	○
✓10-17	PG Electrical Gear A (Channel 1 of PG card)	1~5000	100		○		○	
✓10-18	PG Electrical Gear B (Channel 2 of PG card)	1~5000	100		○		○	
✓10-19	PG Position Control Point (Home)	0~20000	0		○		○	
✓10-20	Range for PG Position Attained (Home range)	0~20000	10		○		○	
✓10-21	P Gain of Zero Speed	0.0~1000.0%	100.0		○		○	○
✓10-22	I Gain of Zero Speed	0.000~10.000 sec	0.100		○		○	○
✓10-23	Feed Forward Gain of APR	0~100	30		○		○	
✓10-24	Decelerate Time of Position	0.00~600.00 sec/00~6000.0 sec	3.00 3.0		○		○	
✓10-25	Max. Frequency for Resolution Switch	50.00~600.00Hz	50.00	○	○	○	○	○
10-26	Reserved							
✓10-27	PG Mechanical Gear A	1~5000	100		○		○	
✓10-28	PG Mechanical Gear B	1~5000	100		○		○	
		Group 11 Advanced Parameters						
11-00	System Control	bit 0: ASR Auto tuning bit 1: Inertia estimate bit 2: Zero Servo bit 3: Invalid deadtime compensation	0				○	
11-01	Per Unit of System Inertia	1~65535 (256=1PU)	400				○	○
✓11-02	Low-speed Bandwidth	0~40Hz	10		○		○	○
✓11-03	High-speed Bandwidth	0~40Hz	10		○		○	○
✓11-04	PDFF Gain Value	0~200%	30				○	
✓11-05	Gain Value of Flux Weakening Curve for Motor 1	0~200%	90				○	○
✓11-06	Gain Value of Flux Weakening Curve for Motor 2	0~200%	90				○	○
✓11-07	Detection Time for Phase-loss	0.00~600.00 sec	0.20	○	○	○	○	○
✓11-08	Reserved							
✓11-09	IGBT Overheat Level for 1-15hp	20.0~110.0°C	90.0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓11-10	IGBT Overheat Level for 20-100hp	20.0~110.0°C	100.0	○	○	○	○	○
✓11-11	Zero-speed Bandwidth	0~40Hz	10		○		○	○
✓11-12	Speed Feed Forward	10~150%	65				○	
✓11-13	Notch Filter Depth	0~20db	0				○	
✓11-14	Notch Filter Frequency	0.00~200.00	0.00				○	
✓11-15	Gain Value of Slip Compensation	0.00~1.00	1.00			○		
✓11-16	Low-pass Filter Time of Keypad Display	0.001~65.535sec	0.100	○	○	○	○	○
✓11-17	Low-pass Filter Time of PG2 Pulse Input	0.000~65.535sec	0.100	○	○	○	○	
11-18 | 11-28	Reserved							
11-29	Accumulative Operation Time of Phase-loss	0~65535 (hour)	0	○	○	○	○	○
11-30	Reserved							

Fault Codes

Fault Name	Fault Descriptions	Corrective Actions
ocA	**Over-current during acceleration**	1. Check for loose contacts between AC motor drive and motor. 2. Short-circuit at motor output: Check for possible poor insulation at the output lines. 3. Acceleration Time too short: Increase the Acceleration Time. 4. In SVC mode, torque boost too high: Decrease the torque compensation setting in Pr.05-24. 5. AC motor drive output power is too small: Replace the AC motor drive with the next higher power model.
ocd	**Over-current during deceleration**	1. Short-circuit at motor output: Check for possible poor insulation at the output line. 2. Deceleration Time too short: Increase the Deceleration Time. 3. AC motor drive output power is too small: Replace the AC motor drive with the next higher power model.
ocn	**Over-current during steady state operation**	1. Short-circuit at motor output: Check for possible poor insulation at the output line. 2. Sudden increase in motor loading: Check for possible motor stall. 3. AC motor drive output power is too small: Replace the AC motor drive with the next higher power model.
GFF	**Ground fault**	When (one of) the output terminal(s) is grounded, short circuit current is more than 50% of AC motor drive rated current, the AC motor drive power module may be damaged. **NOTE: The short circuit protection is provided for AC motor drive protection, not for protection of the user.** 1. Check the wiring connections between the AC motor drive and motor for possible short circuits, also to ground. 2. Check whether the IGBT power module is damaged. 3. Check for possible poor insulation at the output line.

Fault Name	Fault Descriptions	Corrective Actions
occ	Over current in the output side	1. Check if motor power corresponds with the AC motor drive output power. 2. Check the wiring connections to U, V, W for possible short circuits. 3. Check the wiring connections between the AC motor drive and motor for possible short circuits, also to ground. 4. Check for loose contacts between AC motor drive and motor. 5. Increase the Acceleration Time. 6. Check for possible excessive loading conditions at the motor.
ocS	Hardware failure in current detection	Return to the factory
ouA	DC BUS over-voltage during acceleration	1. Check if the input voltage falls within the rated AC motor drive input voltage range. 2. Check for possible voltage transients. 3. If DC BUS over-voltage due to regenerative voltage, please increase the Deceleration Time or add an optional brake resistor.
oud	DC BUS over-voltage during deceleration	
oun	DC BUS over-voltage in constant speed	
ouS	Hardware failure in voltage detection	Return to the factory
LuA	DC BUS voltage is less than Pr.06-00 during acceleration	1. Check if the input voltage is normal 2. Check for possible sudden load
Lud	DC BUS voltage is less than Pr.06-00 during deceleration	
Lun	DC BUS voltage is less than Pr.06-00 in constant speed	
PHL	**Phase Loss**	Check Power Source Input if all 3 input phases are connected without loose contacts.
oH1	**IGBT overheating** IGBT temperature exceeds protection level 1 to15HP: 90 °C 20 to 100HP: 100 °C	1. Ensure that the ambient temperature falls within the specified temperature range. 2. Make sure that the ventilation holes are not obstructed. 3. Remove any foreign objects from the heatsinks and check for possible dirty heat sink fins. 4. Check the fan and clean it. 5. Provide enough spacing for adequate ventilation.
oH2	**Heatsink overheating** Heat sink temperature exceeds 90°C	1. Ensure that the ambient temperature falls within the specified temperature range. 2. Make sure that the ventilation holes are not obstructed. 3. Remove any foreign objects from the heatsinks and check for possible dirty heat sink fins. 4. Check the fan and clean it. 5. Provide enough spacing for adequate ventilation.
tH1o	OH1 hardware failure	Return to the factory
tH2o	OH2 hardware failure	Return to the factory
FAn	**Fan failure**	1. Make sure that the fan is not obstructed. 2. Return to the factory
oL	**Overload** The AC motor drive detects excessive drive output current. **NOTE: The AC motor drive can withstand up to 150% of the rated current for a maximum of 60 seconds.**	1. Check whether the motor is overloaded. 2. In SVC mode, reduce torque compensation setting in Pr.05-24 3. Take the next higher power AC motor drive model.
EoL1	**Motor 1 overload**	1. Check whether the motor 1 is overloaded. 2. Check whether the rated current of motor 1 (Pr.05-01) is suitable 3. Take the next higher power AC motor drive model.

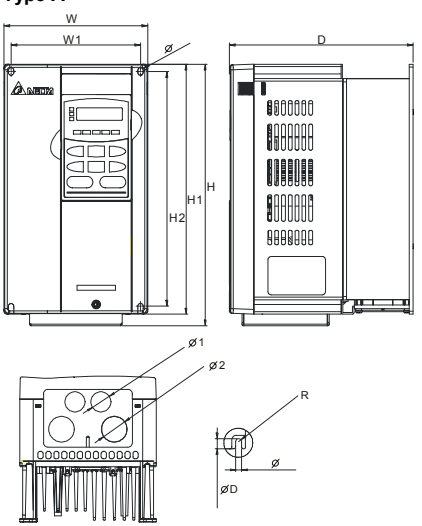
Fault Name	Fault Descriptions	Corrective Actions
EoL2	**Motor 2 overload**	1. Check whether the motor 2 is overloaded. 2. Check whether the rated current of motor 2 (Pr.05-13) is suitable 3. Take the next higher power AC motor drive model.
oH3	**Motor overheating** The AC motor drive detects that the internal temperature exceeds Pr.06-30 (PTC level)	1. Make sure that the motor is not obstructed. 2. Ensure that the ambient temperature falls within the specified temperature range. 3. Take the next higher power AC motor drive model.
FuSE	**Broken fuse** The transistor module of the main circuit is broken	1. Check whether the fuse of the transistor module is functioning well 2. Check whether the loading side is short-circuit or grounded
ot1	**Electronic Thermal Relay 1 Protection**	1. Check whether the motor is overloaded. 2. Check whether motor rated current setting (Pr.05-01) is suitable 3. Check electronic thermal relay function 4. Take the next higher power AC motor drive model.
ot2	**Electronic Thermal Relay 2 Protection**	
cF1	**Internal EEPROM can not be programmed.**	1. Press “RESET” key to the factory setting 2. Return to the factory.
cF2	**Internal EEPROM can not be read.**	1. Press “RESET” key to the factory setting 2. Return to the factory.
cd0	**Isum error**	Re-power on to try it. If fault code is still displayed on the keypad please return to the factory
cd1	**U-phase error**	
cd2	**V-phase error**	
cd3	**W-phase error**	
Hd0	**CC (current clamp)**	Re-power on to try it. If fault code is still displayed on the keypad please return to the factory
Hd1	**OC hardware error**	
Hd2	**OV hardware error**	
Hd3	**GFF hardware error**	
AUE	**Auto tuning error**	1. Check cabling between drive and motor 2. Retry again
AFE	**PID loss (ACI)**	1. Check the wiring of the PID feedback 2. Check the PID parameters settings
PGF1	**PG feedback error**	Check if Pr.10-01 is set to 0 when it is PG feedback control
PGF2	**PG feedback loss**	Check the wiring of the PG feedback
PGF3	**PG feedback stall**	1. Check the wiring of the PG feedback 2. Check if the setting of PI gain and deceleration is suitable 3. Return to the factory
PGF4	**PG slip error**	
PGr1	**Pulse input error**	1. Check the pulse wiring 2. Return to the factory
PGr2	**Pulse input loss**	
ACE	**ACI loss**	1. Check the ACI wiring 2. Check if the ACI signal is less than 4mA
EF	**External Fault**	1. Input EF (N.O.) on external terminal is closed to GND. Output U, V, W will be turned off. 2. Give RESET command after fault has been cleared.
EF1	**Emergency stop**	1. When the multi-function input terminals MI1 to MI6 are set to emergency stop, the AC motor drive stops output U, V, W and the motor coasts to stop. 2. Press RESET after fault has been cleared.
bb	**External Base Block**	1. When the external input terminal (B.B) is active, the AC motor drive output will be turned off. 2. Deactivate the external input terminal (B.B) to operate the AC motor drive again.
Pcode	**Password is locked.**	Keypad will be locked. Turn the power ON after power OFF to re-enter the correct password. See Pr.00-07 and 00-08.
Ccode	**Software protection failure**	Return to the factory.

Fault Name	Fault Descriptions	Corrective Actions
cE1	**Illegal function code**	Check if the function code is correct (function code must be 03, 06, 10, 63)
cE2	**Illegal data address**	Check if the communication address is correct
cE3	**Illegal data value**	Check if the data value exceeds max./min. value
cE4	**Slave device failure**	Check the connection of the Slave device
cE10	**Communication time-out**	Check if the wiring for the communication is correct
cP10	**Keypad (KPV-CE01) communication time-out**	1. Check if the wiring for the communication is correct 2. Check if there is any wrong with the keypad
bF	**Braking resistor fault**	If the fault code is still displayed on the keypad after pressing "RESET" key, please return to the factory.
Ydc	**Y-connection/Δ-connection switch error**	1. Check the wiring of the Y-connection/△-connection 2. Check the parameters settings

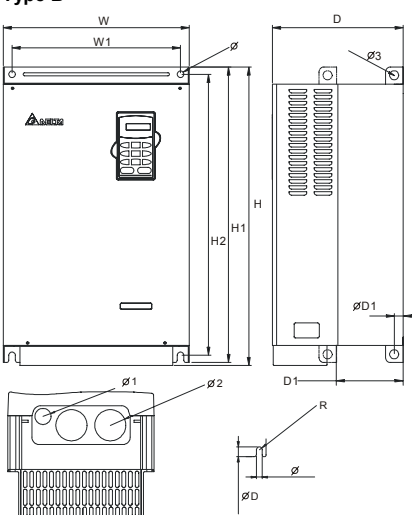
Dimensions

It can be divided into two types, type A and type B, from the appearance. Type A is for frame B, frame C and frame D. Type B is for frame E and frame E1.

Type A



Type B



Unit: mm [inch]

Frame	B	B*	C	D	E1	E
W	150.0 [5.91]	150.0 [5.91]	200.0 [7.88]	250.0 [9.84]	370.0 [14.57]	370.0 [14.57]
W1	135.0 [5.32]	135.0 [5.32]	185.6 [7.31]	226.0 [8.90]	335.0 [13.19]	335.0 [13.19]
H	-	272.1 [10.72]	-	-	595.0 [23.43]	-
H1	260.0 [10.24]	-	323.0 [12.73]	403.8 [15.90]	589.0 [23.19]	589.0 [23.19]
H2	244.3 [9.63]	244.3 [9.63]	303.0 [11.94]	384.0 [15.12]	560.0 [22.05]	560.0 [22.05]
D	160.2 [6.31]	183.7 [7.24]	183.2 [7.22]	205.4 [8.08]	260.0 [10.24]	260.0 [10.24]
D1	-	-	-	-	132.5 [5.22]	132.5 [5.22]
Ø	6.5 [0.26]	6.5 [0.26]	7.0 [0.28]	10.0 [0.39]	13.0 [0.51]	13.0 [0.51]
R	3.25 [0.13]	3.25 [0.13]	-	3.25 [0.13]	6.5 [0.25]	6.5 [0.25]
ØD	11.3 [0.44]	11.3 [0.44]	13.5 [0.53]	13.5 [0.53]	21.0 [0.83]	21.0 [0.83]
ØD1	-	-	-	-	18.0 [0.71]	18.0 [0.71]
Ø1	22.0 [0.87]	28.0 [1.10]	22.0 [0.87]	28.0 [1.10]	22.0 [0.87]	22.0 [0.87]
Ø2	28.0 [1.10]	34.0 [1.34]	42.6 [1.68]	42.0 [1.65]	62.0 [2.44]	62.0 [2.44]
Ø3	-	-	-	-	18.0 [0.71]	18.0 [0.71]

NOTE

Frame B: VFD007V23A/43A-2, VFD015V23A/43A-2, VFD022V23A/43A-2
Frame B*: VFD037V23A/43A-2
Frame C: VFD055V23A/43A-2, VFD075V23A/43A-2, VFD110V43B-2
Frame D: VFD110V23A/43A-2, VFD150V23A/43A-2, VFD185V23A/43A-2, VFD220V23A/43A-2
Frame E1: VFD300V23A-2, VFD370V23A-2, VFD550V43C-2, VFD750V43C-2
Frame E: VFD300V43A-2, VFD370V43A-2, VFD450V43A-2