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

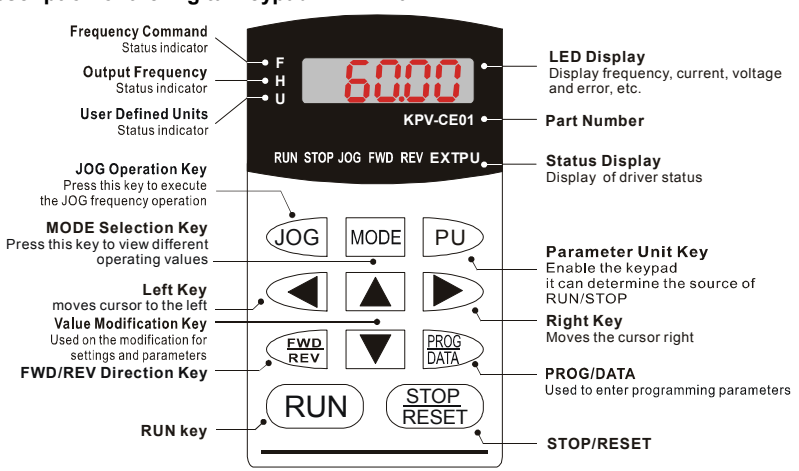
Voltage Class		230V Class											
Model Number VFD-XXXV		007	015	022	037	055	075	110	150	185	220	300	370
Max. Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
Max. Applicable Motor Output (hp)		1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	40	50
Output Rating	Rated Output Capacity (kVA)	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	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: 1/4096(12-bit) 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
	Brake Torque	About 20%
	Motor Protection	Electronic thermal relay protection

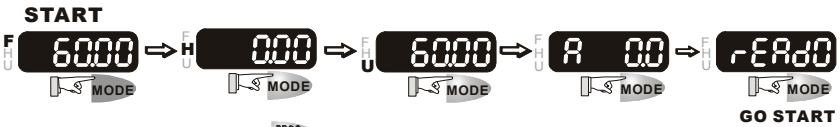
General Specifications		
	Over-current Protection	The current forces 220% of the over-current protection and 300% of the rated current
	Ground Leakage Current Protection	Higher than 50% X rated current
	Overload Ability	Constant torque: 150% for 60 seconds, variable torque: 200% for 3 seconds
	Over-voltage 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
Environmental Conditions	Protection Level	NEMA 1/IP21
	Operation Temperature	-10°C to 40°C
	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



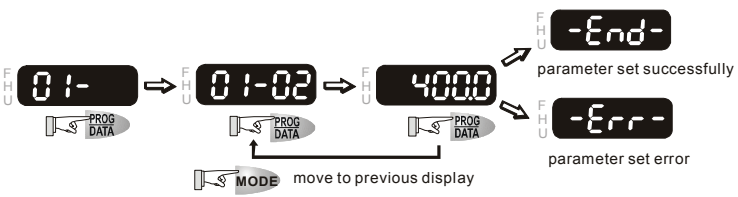
How to Operate the Digital Keypad KPV-CE01

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

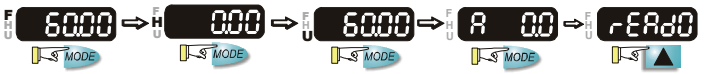
To copy parameters 1

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

about 2-3 seconds

start blinking

It will display "End" to indicate that the first parameter is saved, then return to "rEAd0".



about 2-3 seconds

start blinking

It will display "End" to indicate that the second parameter is saved, then return to "rEAd1".

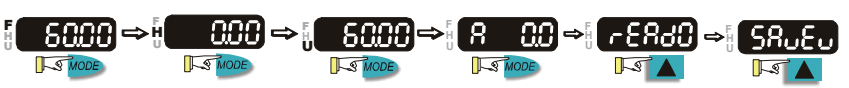
To copy parameters 2

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

about 2-3 seconds

start blinking

It will display "End" to indicate that the first parameter is saved, then return to "SAvEv".



about 2-3 seconds

start blinking

It will display "End" to indicate that the second parameter is saved, then return to "SAvEv".

Basic Wiring Diagram

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

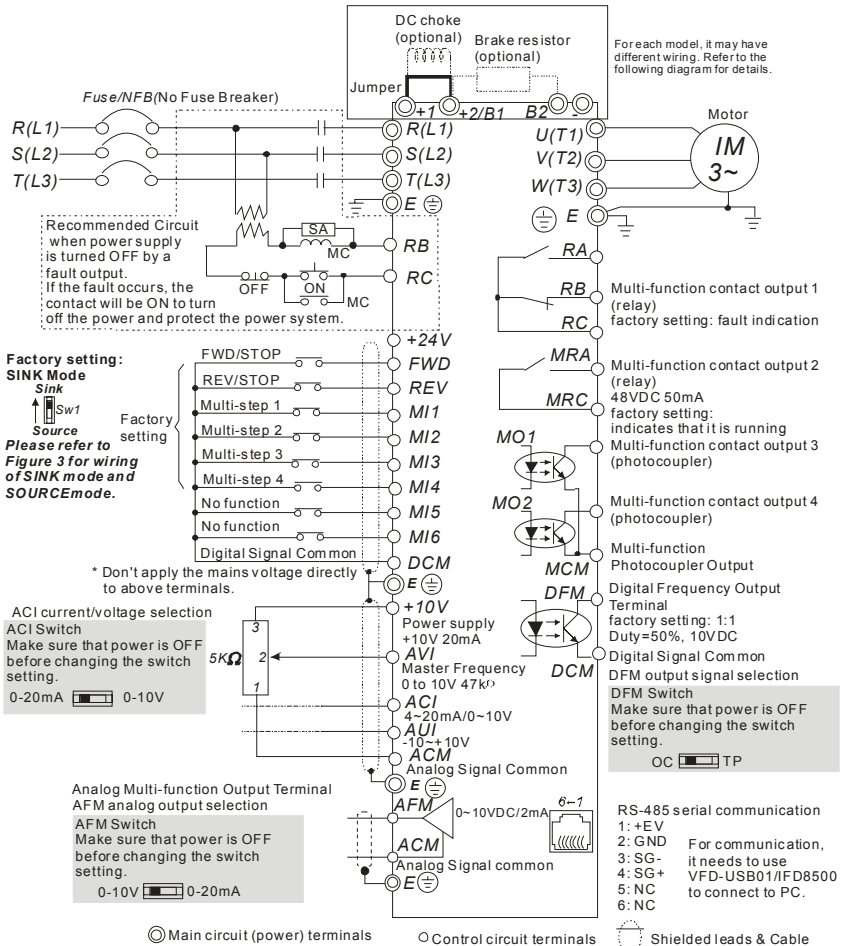


Figure 1 for models of VFD-VE Series (15 HP and below)
VFD007V23A/43A-2, VFD015V23A/43A-2,
VFD022V23A/43A-2, VFD037V23A/43A-2,
VFD055V23A/43A-2, VFD075V23A/43A-2,
VFD110V43B-2, VFD110V23A/43A-2

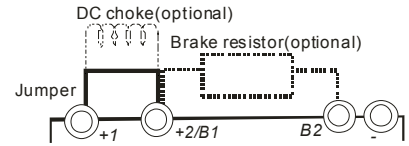


Figure 2 for models of VFD-VE Series (20HP and above)
VFD150V23A/43A-2, VFD185V23A/43A-2, VFD220V23A/43A-2,
VFD300V43A-2, VFD370V43A-2, VFD450V43A-2, VFD300V23A-2,
VFD370V23A-2, VFD550V43C-2, VFD750V43C-2

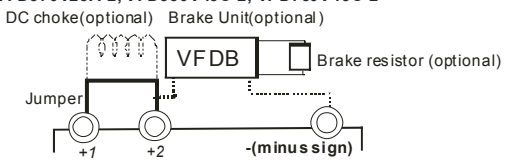
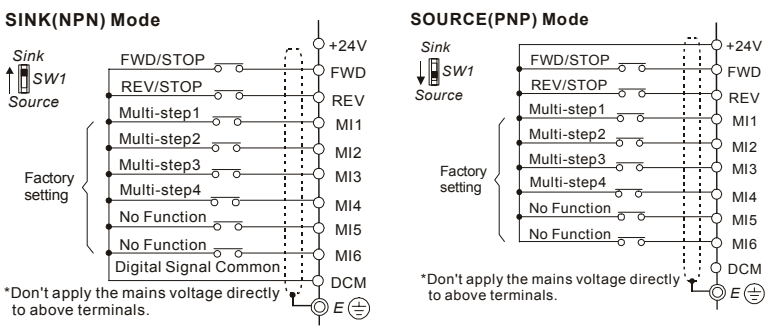


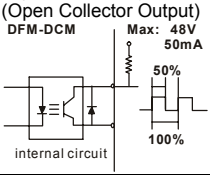
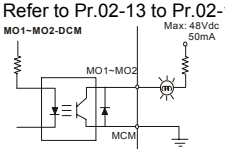
Figure 3 Wiring for SINK(NPN) mode and SOURCE(PNP) mode

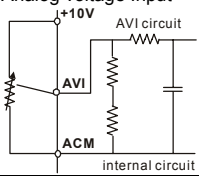
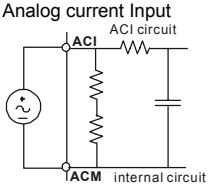
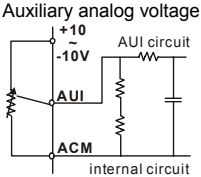
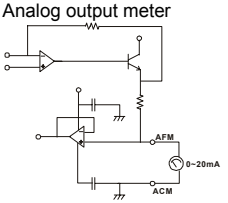


Terminal Explanations

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)
P-B, P2/B1~B2	+2/B1~B2	Connections for Brake Resistor (optional)
P2~N, P2/B1~N	+2~(-), +2/B1~(-)	Connections for External Brake 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. ON: the activation current is 6.5mA. OFF: leakage current tolerance is 10μA.
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: 4.7kΩ Max. current: 50mA Max. voltage: 48VDC. Jumper: DFM jumper, factory setting is OC
+24V	DC Voltage Source	+24VDC, 80mA 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	
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)	

Terminal Symbol	Terminal Function	Factory Settings (SINK) ON: Connect to DCM
MCM	Multi-function Output Common (Photocoupler)	Max. 48VDC 50mA
+10V	Potentiometer Power Supply	+10VDC 20mA (variable resistor 3-5kohm)
AVI	Analog voltage Input 	Impedance: 200kΩ Resolution: 12 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: 12 bits Range: 4 ~ 20mA = 0 ~ Max. Output Frequency (Pr.01-00) Set-up: Pr.03-00 ~ Pr.03-02 Jumper: ACI jumper, factory setting is 4-20mA
AUI	Auxiliary analog voltage input 	Impedance: 200kΩ Resolution: 12 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(voltage output) 1.1mΩ (current output) Output current 20mA max Resolution: max. frequency corresponds to 0-10V Range: 0 ~ 10VDC Function: Pr.03-18 Switch: AFM switch, factory setting is 0-10V
ACM	Analog control signal (common)	Common for AVI, ACI, AUI, AFM

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

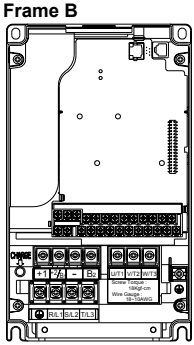
Power Terminals and Control Terminals

Frame	Power range	Models
B (B1)	1-3hp (0.75-2.2kW)	VFD007V23A/43A-2, VFD015V23A/43A-2, VFD022V23A/43A-2
B (B2)	5hp (3.7kW)	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 (E1)	40-60hp (30-45kW)	VFD300V43A-2, VFD370V43A-2, VFD450V43A-2
E (E2)	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

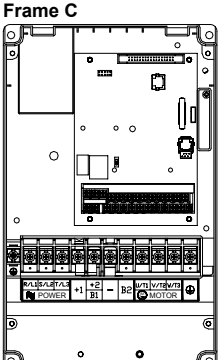


Main circuit terminals

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			
VFD022V43A-2			
VFD037V23A-2			
VFD037V43A-2			

Frame C

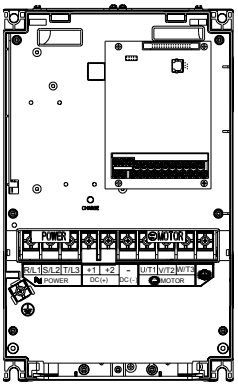


Main circuit terminals

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

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

Frame D

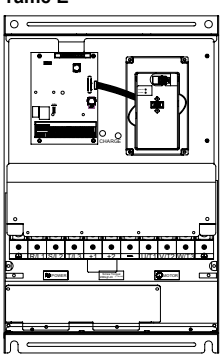


Main circuit terminals

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

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

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			
VFD450V43A-2			
VFD300V23A-2		200kgf-cm (173in-lbf)	
VFD370V23A-2			
VFD550V43C-2			
VFD750V43C-2			

NOTE To connect 6 AWG (13.3 mm2) wires, use Recognized Ring Terminals.

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: Multifunction display, see Pr.00-04 (LED U) 3: Display the output current (A)	0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓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 (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 (G) (refer to Pr.10-00 and Pr.10-01) 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: Number of actual motor revolution (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. 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							
✓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	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓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	○	○	○	○	
✓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	○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
01-34	Mode Selection when Frequency < Fmin	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	13: cancel the setting of the optimal acceleration/deceleration time	0	○	○	○	○	
02-24	Multi-Function Input Command 8	14: switch between drive settings 1 and 2	0	○	○	○	○	
02-25	Multi-Function Input Command 9	15: operation speed command form AVI	0	○	○	○	○	
02-26	Multi-Function Input Command 10	16: operation speed command form ACI	0	○	○	○	○	
02-27	Multi-Function Input Command 11	17: operation speed command form AUI	0	○	○	○	○	
02-28	Multi-Function Input Command 12	18: Emergency Stop (07-36)	0	○	○	○	○	○
02-29	Multi-Function Input Command 13	19: Digital Up command	0	○	○	○	○	
02-30	Multi-Function Input Command 14	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		○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		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 position learning function (valid at stop)			○		○	
		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					○	
		44: Reset initial reel diameter		○	○	○	○	○
		45: Reset initial reel diameter 0		○	○	○	○	○
		46: Reset initial reel diameter 1		○	○	○	○	○
		47: Reset PID control integration of tension		○	○	○	○	○
		48: Mechanical gear ratio switch			○		○	○
		49: Reserved						
		50: Reserved						
✗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		○	○	○	○	○
✗02-35	Multi-function Output 5 (MO3)	12: Mechanical brake release (Pr.02-31)		○	○	○	○	○
		13: Overheat		○	○	○	○	○
		14: Software brake signal		○	○	○	○	○
✗02-36	Multi-function Output 6 (MO4)	15: PID feedback error		○	○	○	○	○
		16: Slip error (oSL)		○	○	○	○	
		17: Terminal count value attained (Pr.02-16)		○	○	○	○	○
✗02-37	Multi-function Output 7 (MO5)	18: Preliminary count value attained (Pr.02-17)		○	○	○	○	○
		19: Baseblock (B.B.) Indication		○	○	○	○	○
		20: Warning output		○	○	○	○	○
✗02-38	Multi-function Output 8 (MO6)	21: Over voltage warning		○	○	○	○	○
		22: Over-current stall prevention warning		○	○	○	○	○
		23: Over-voltage stall prevention warning		○	○	○		
✗02-39	Multi-function Output 9 (MO7)	24: Operation mode indication		○	○	○	○	○
		25: Forward command		○	○	○	○	
		26: Reverse command		○	○	○	○	
✗02-40	Multi-function Output 10 (MO8)	27: Output when current >= Pr.02-32		○	○	○	○	○
		28: Output when current < Pr.02-32		○	○	○	○	○
		29: Output when frequency >= Pr.02-33		○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓02-41	Multi-function Output 11 (MO9)	30: Output when frequency < Pr.02-33		○	○	○	○	○
		31: Y-connection for the motor coil		○	○	○	○	
		32: Δ connection for the motor coil		○	○	○	○	
✓02-42	Multi-function Output 12 (MOA)	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)		○	○	○	○	
		41: Multi-position attained					○	
		42: Crane function		○	○	○	○	
		43: Motor zero-speed output (Pr.02-43)		○	○	○	○	
		44: Max. reel diameter attained		○	○	○	○	○
		45: Empty reel diameter attained		○	○	○	○	○
		46: Broken belt detection		○	○	○	○	○
		47: Break release at stop		○	○	○	○	
		48: Error PID feedback of tension		○	○	○	○	○
		49: Reserved						
		50: Reserved						
✓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	0.000	○	○	○	○	○
✓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	○	○	○		
✓02-43	Zero-speed Level of Motor	0~65535 rpm	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					○	
		11: PID feedback signal of tension		○	○	○	○	○
		12: Line speed		○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		13: Reel diameter		○	○	○	○	○
		14: PID target value of tension (tension closed-loop)		○	○	○	○	○
		15: Tension setting (tension open-loop)						○
		16: Zero-speed tension						○
		17: Tension taper						○
✓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	○	○	○	○	○
✓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		○	○	○	○	○
✓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 1	0: Output frequency (Hz)	0	○	○	○	○	○
		1: Frequency command (Hz)		○	○	○	○	○
✓03-21	Analog Output Selection 2	2: Motor speed (Hz)		○	○	○	○	○
		3: Output current (rms)		○	○	○	○	○
✓03-24	Analog Output Selection 3	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 1	0~200.0%	100.0	○	○	○	○	○
✓03-20	Analog Output Value in REV Direction 1	0: Absolute value in REV direction 1: Output 0V in REV direction 2: Enable output voltage in REV direction	0	○	○	○	○	○
✓03-22	Analog Output Gain 2	0~200.0%	100.0	○	○	○	○	○
✓03-23	Analog Output Value in REV Direction 2	0: Absolute value in REV direction 1: Output 0V in REV direction 2: Enable output voltage in REV direction	0	○	○	○	○	○
✓03-25	Analog Output Gain 3	0~200.0%	100.0	○	○	○	○	○
✓03-26	Analog Output Value in REV Direction 3	0: Absolute value in REV direction 1: Output 0V in REV direction 2: Enable output voltage in REV direction	0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
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		○		○	
✓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: Reserved	0			○	○	○
05-01	Full-load Current of Motor 1	40-100%	#.##	○	○	○	○	○
✓05-02	Rated power of Motor 1	0~655.35	#.##			○	○	○
✓05-03	Rated speed of Motor 1 (rpm)	0~65535 1710 (60Hz, 4 poles), 1410 (50Hz, 4 poles)	1710		○	○	○	○
05-04	Number of Motor Poles 1	2~20	4	○	○	○	○	○
05-05	No-load Current of Motor 1	0-factory setting of Pr.05-01	#.##		○	○	○	○
05-06	Rotor Resistance R1 of Motor 1	0~65.535Ω	#.###			○	○	○
05-07	Rr of Motor 1	0~65.535Ω	#.###			○	○	○
05-08	Lm of Motor 1	0~6553.5mH	#.#			○	○	○
05-09	Lx of Motor 1	0~6553.5mH	#.#			○	○	○
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	○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
05-12	Y-connection /Δ-connection Switch	0: Disable 1: Enable	0	○	○	○	○	
05-13	Full-load Current of Motor 2	40-100%	#.##	○	○	○	○	○
✓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- factory setting of Pr.05-01	#.##		○	○	○	○
05-18	Rs of Motor 2	0~65.535Ω	#.###			○	○	○
05-19	Rr of Motor 2	0~65.535Ω	#.###			○	○	○
05-20	Lm of Motor 2	0~6553.5mH	#.#			○	○	○
05-21	Lx of Motor 2	0~6553.5mH	#.#			○	○	○
✓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	○	○	○		
✓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	0.0: Disable						
		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	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓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: Standard 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	0	○	○	○	○	○
		1: Over-current during acceleration (ocA)		○	○	○	○	○
06-18	Second Most Recent Fault Record	2: Over-current during deceleration (ocd)	0	○	○	○	○	○
		3: Over-current during constant speed (ocn)		○	○	○	○	○
		4: Ground fault (GFF)		○	○	○	○	○
06-19	Third Most Recent Fault Record	5: IGBT short-circuit (occ)	0	○	○	○	○	○
		6: Over-curent at stop (ocS)		○	○	○	○	○
		7: Over-voltage during acceleration (ovA)		○	○	○	○	○
06-20	Fourth Most Recent Fault Record	8: Over-voltage during deceleration (ovd)	0	○	○	○	○	○
		9: Over-voltage during constant speed (ovn)		○	○	○	○	○
		10: Over-voltage at stop (ovS)		○	○	○	○	○
06-21	Fifth Most Recent Fault Record	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)	0	○	○	○	○	○
		15: Phase loss (PHL)		○	○	○	○	○
		16: IGBT heat sink over-heat (oH1)		○	○	○	○	○
06-22	Sixth Most Recent Fault Record	17: Heat sink over-heat (oH2)(for 40HP above)	0	○	○	○	○	○
		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: Reserved						
		29: Reserved						
		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)			○		○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
		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: Reserved						
		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)		○	○	○	○	○
		63: Slip error (oSL)		○	○	○	○	
		64: Broken belt error (bEb)		○	○	○	○	○
		65: Error PID feedback signal of tension (tdEv)		○	○	○	○	○
✓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: Standard 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	○	○	○	○	○
06-32	Output Frequency for Malfunction	0.00~655.35 Hz	0.00	○	○	○	○	○
06-33	Output AC Voltage for Malfunction	0.0~6553.5 V	0.0	○	○	○	○	○
06-34	DC Voltage for Malfunction	0.0~6553.5 V	0.0	○	○	○	○	○
06-35	Current Value for Malfunction	0.00~655.35 Amp	0.00	○	○	○	○	○
06-36	IGBT Temperature for Malfunction	0.0~6553.5 °C	0.0	○	○	○	○	○
		Group 7 Special Parameters						
✓07-00	Software Brake Level	230V: 350.0~450.0Vdc 460V: 700.0~900.0Vdc	380.0 760.0	○	○	○	○	○
✓07-01	DC Brake Current Level	0~100%	0				○	○
✓07-02	DC Brake Time during Start-up	0.0~60.0 sec	0.0				○	○
✓07-03	DC Brake Time during Stopping	0.0~60.0 sec	0.0				○	○
✓07-04	Start-point for DC Brake	0.00~600.00Hz	0.00	○	○	○		
07-05	DC Brake 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	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓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			○	○	○
✓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	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
Group 8 High-function PID Parameters								
✓08-00	Input Terminal for PID Feedback	0: No function 1: Negative PID feedback from external terminal AVI (Pr.03-00) 2: Negative PID feedback from PG card (Pr.10-15, skip direction) 3: Negative PID feedback from PG card (Pr.10-15) 4: Positive PID feedback from external terminal AVI (Pr.03-00) 5: Positive PID feedback from PG card (Pr.10-15, skip direction) 6: Positive 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	○	○	○	○	
08-16 | 08-20	Reserved							
08-21	Tension Control Selection	0: Disable	0	○	○	○	○	
		1: Closed-loop, speed mode		○	○	○	○	
		2: Line speed, speed mode		○	○	○	○	
		3: Reserved						
		4: Open-loop, torque mode						○
08-22	Wind Mode	0: Rewind 1: Unwind	0	○	○	○	○	○
08-23	Mechanical Gear Ratio A	1-65535	100	○	○	○	○	○
08-24	Mechanical Gear Ratio B	1-65535	100	○	○	○	○	○
08-25	Source of the Tension Command/Line Speed	0: Parameter setting (Pr.08-26) 1: RS-485 communication setting (Pr.08-26) 2: Analog input (Pr. 03-00~03-02 is set to 14 PID target value of tension, 03-00~03-02 is set to 12 line speed)	0	○	○	○	○	○
✓08-26	PID Target Value of Tension/Line Speed	0.0~100.0%	50.0	○	○	○	○	○
08-27	Source of Tension/Line Speed PID Feedback	0: Analog input (Pr. 03-00~03-02 is set to 11 PID feedback of tension) 1: Pulse input (Pr.08-40)	0	○	○	○	○	○
08-28	Auto-tuning Tension PID	0: Disable 1: Reel diameter (08-29~08-31corresponds to 08-44, 08-32~08-34 corresponds to 08-43) 2: Frequency (08-29~08-31 corresponds to 01-07, 08-32~08-34 corresponds to 01-00)		○	○	○	○	○
✓08-29	Tension PID P1	0.0~1000.0	50.0	○	○	○	○	○
✓08-30	Tension PID I1	0.00~500.00 sec	1.00	○	○	○	○	○
08-31	Reserved							
✓08-32	Tension PID P2	0.0~1000.0	50.0	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓08-33	Tension PID I2	0.00~500.00 sec	1.00	○	○	○	○	○
08-34	Reserved							
✓08-35	PID/Line Speed Output Status	0: Positive output 1: Negative output	0	○	○	○	○	○
08-36	Tension/Line Speed PID Output Limit	0~100.00% (according to Pr,01-00)	20.00	○	○	○	○	○
08-37	Source of Line Speed Input Command	0: Disable 1: Analog input (Pr. 03-00~03-02 is set to 12 line speed) 2: RS-485 communication setting (Pr.08-41) 3: Pulse input (Pr.08-40) 4: DFM-DCM pulse input (Pr.02-18)	0	○	○	○	○	○
08-38	Max. Line Speed	0.0~3000.0m/min	1000.0	○	○	○	○	○
08-39	Min. Line Speed	0.0~3000.0m/min	0.0	○	○	○	○	○
08-40	Pulse Number for Each Meter	0.0~6000.0	0.0	○	○	○	○	○
✓08-41	Current Line Speed	0.0~3000.0m/min	0.0	○	○	○	○	○
08-42	Source of Reel Diameter	0: Calculated by line speed 1: Calculated by integrating thickness (encoder is on reel shaft)(Pr.08-49~51, Pr.10-15) 2: Calculated by integrating thickness (encoder is on motor)(Pr.08-23~08-24, 08-50~08-51, 10-00~10-01) 3: Calculated by analog input (Pr.03-00~03-02 is set to 13)	0	○	○	○	○	○
08-43	Max. Reel Diameter	1.0~6000.0mm	6000.0	○	○	○	○	○
08-44	Empty Reel Diameter	1.0~6000.0mm	1.0	○	○	○	○	○
08-45	Source of Initial Reel Diameter	0: RS-485 communication setting (Pr.08-46) 1: Analog input (Pr.03-00-Pr.03-02 is set to 13)	0	○	○	○	○	○
✓08-46	Initial Reel Diameter	1.0~6000.0mm	1.0	○	○	○	○	○
08-47	Initial Reel Diameter 1	1.0~6000.0mm	1.0	○	○	○	○	○
08-48	Initial Reel Diameter 2	1.0~6000.0mm	1.0	○	○	○	○	○
08-49	Number of Pulse per Revolution	1~10000ppr	1	○	○	○	○	○
08-50	Coil Number for Each Layer	0.001~60.000mm	1.000	○	○	○	○	○
08-51	Material Thickness	0.001~60.000mm	1.000	○	○	○	○	○
✓08-52	Filter Time of Reel Diameter	0.00 to 100.00 seconds	1.00	○	○	○	○	○
08-53	Auto Compensation of Reel Diameter	0: Disable 1: Enable	1.00	○	○	○	○	○
✓08-54	Current Reel Diameter	1.0~6000.0mm	1.0	○	○	○	○	○
08-55	Smart Start	0: Disable 1: Enable 2: In unwind mode, rewind in reverse direction	1	○	○	○	○	○
08-56	Switch Level for Smart Start and PID function	0.0~100.0% (according to Pr.08-26)	15.0	○	○	○	○	○
08-57	Frequency for Smart Start	0.00~600.00Hz	2.00	○	○	○	○	○
✓08-58	Accel. Time for Smart Start	0.01~600.00 seconds	3.00	○	○	○	○	
08-59	Broken Belt Detection	0: Disable 1: Enable	0	○	○	○	○	
08-60	Min. Line Speed of Broken Belt Detection	0.0~3000.0m/min	0.0	○	○	○	○	
08-61	Allowance Error of Line Speed of Broken Belt Detection	1.0~6000.0mm	100.0	○	○	○	○	
08-62	Detection Time of Broken Belt	0.00~100.00 sec	1.00	○	○	○	○	
08-63	Allowance Error Level of Tension/Line Speed PID Feedback	0~100%	100	○	○	○	○	
08-64	Allowance Error Detection Time of Tension PID Feedback	0.0~10.0 sec	0.5	○	○	○	○	
08-65	Error Treatment of Tension PID Feedback	0: Warn and keep operation 1: Warn and coast to stop 2: Warn and ramp to stop	0	○	○	○	○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
08-66	Upper Limit of Tension PID Feedback	0.0~100.0%	100.0	○	○	○	○	○
08-67	Lower Limit of Tension PID Feedback	0.0~100.0%	0.0	○	○	○	○	○
08-68	Reserved							
08-69	DFM Selection	0: Output frequency 1: Frequency command	0	○	○	○	○	○
08-70	Low-pass Filter Time of Line Speed	0.00~100.00 sec	0.00	○	○	○	○	○
08-71 | 08-75	Reserved							
08-76	Source of Tension Setting	0: Communication RS-485 (Pr.08-78) 1: Analog input (Pr. 03-00~03-02 is set to 15 tension setting) (Pr.08-78)	0					○
08-77	Max. Tension	0~30000 N	0					○
08-78	Tension Setting	0~30000 N	0					○
08-79	Source of Zero-speed Tension Setting	0: Disable 1: Communication RS-485 (Pr.08-80) 2: Analog input (Pr. 03-00~03-02 is set to 16 zero-speed tension) (Pr.08-80)	0					○
08-80	Setting of Zero-speed Tension	0~30000 N	0					○
08-81	Source of Tension Taper	0: Communication RS-485 (Pr.08-82) 1: Analog input (Pr. 03-00~03-02 is set to 17 tension taper)(Pr.08-82)	0					○
08-82	Tension Taper	0~100%	0					○
08-83	Friction Compensation	0.0~100.0%	0.0					○
08-84	Compensation Coefficient of Material Inertial	0~30000	0					○
08-85	Torque Feedforward Gain	0.0~100.0%	50.0					○
08-86	Low Pass Filter Time of Torque Feedforward	0.00~100.00	5.00					○
08-87 | 08-99	Reserved							

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) 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	○	○	○	○	○
✓09-05	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	3	○	○	○	○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓09-07	COM2 Time-out Detection (Keypad)	0.0~100.0 sec	0.0	○	○	○	○	○
✓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	○	○	○	○	○
✓09-21	Multi-function Output Status	0~65535	Read-only	○	○	○	○	○
✓09-22	AFM2 Status	0~4095	Read-only	○	○	○	○	○
✓09-23	AFM3 Status	0~4095	Read-only	○	○	○	○	○
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	0~40	10		○		○	
✓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	0~40	10		○		○	
✓10-07	ASR (Auto Speed Regulation) Control (I) 2	0.000~10.000 sec	0.100		○		○	

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓10-08	ASR 1/ASR2 Switch Frequency	5.00~600.00Hz	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)	50		○		○	
✓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	0~40	10		○		○	
✓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 A1	1~65535	100		○		○	○
✓10-28	PG Mechanical Gear B1	1~65535	100		○		○	○
✓10-29	PG Mechanical Gear A2	1~65535	100		○		○	○
✓10-30	PG Mechanical Gear B2	1~65535	100		○		○	○

Group 11 Advanced Parameters

✓11-00	System Control	bit 0: ASR Auto tuning bit 1: Inertia estimate (only for FOCPG mode) bit 2: Zero Servo bit 3: Reserved bit 4: Enable gain adjustment of position loop KP	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				○	○

Pr.	Explanation	Settings	Factory Setting	VF	VFPG	SVC	FOCPG	TQRPG
✓11-07	Detection Time for Phase-loss	0.01~600.00 sec	0.20	○	○	○	○	○
11-08	Reserved							
✓11-09	Level of Phase-loss	0.0~320.0	60.0	○	○	○	○	○
11-10	Speed Feed Forward Gain	0~100%	0				○	
✓11-11	Zero-speed Bandwidth	0~40Hz	10		○		○	○
✓11-12	Speed Response of Flux Weakening Area	0: Disable 0~150%	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	APR Gain	0.00~40.00	10.00				○	
✓11-19	APR Curve Time	0.00~655.35 sec	3.00				○	
11-20 | 11-28	Reserved							
11-29	Accumulative Operation Time of Phase-loss	0~65535 (hour)	0	○	○	○	○	○
11-30 | 11-40	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.

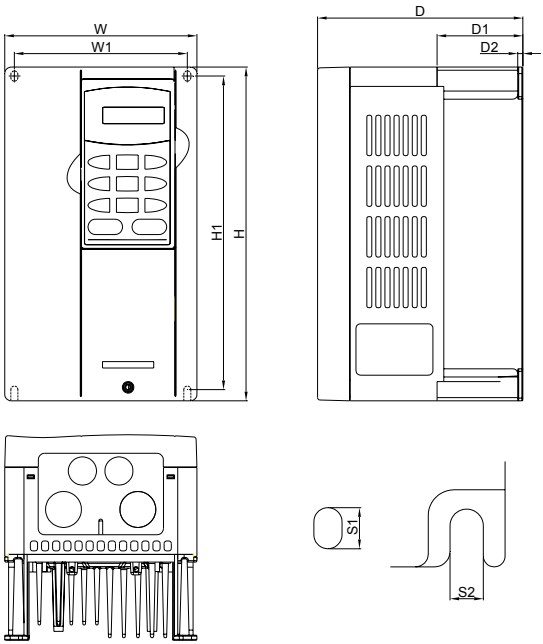
Fault Name	Fault Descriptions	Corrective Actions
occ	Over current in the output side	1. Check if motor power corresponds with the AC motor drive output power. 2. Check the wiring connections to U, V, W for possible short circuits. 3. Check the wiring connections between the AC motor drive and motor for 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	DC BUS voltage is less than Pr.06-00 at stop	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	
LuS	DC BUS voltage is less than Pr.06-00 at stop	
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.

Fault Name	Fault Descriptions	Corrective Actions
EoL 1	**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.
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
ot 1 ot2	**Electronic Thermal Relay 1/2 Protection** These two fault codes will be displayed when output current exceeds the level of over-torque detection (Pr.06-08 or Pr.06-11) and it is set 2 or 4 in Pr.06-06 or Pr.06-09.	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.
cF 1	**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
cd 1	**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
Hd 1	**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
PGF 1	**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**	
PGr 1	**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.

Fault Name	Fault Descriptions	Corrective Actions
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.
cE1	**Illegal function code**	Check if the function code is correct (function code must be 03, 06, 10, 63)
cE2	**Illegal data address (00H to 254H)**	Check if the communication address is correct
cE3	**Illegal data value**	Check if the data value exceeds max./min. value
cE4	**Data is written to read-only address**	Check the connection of the Slave device
cE10	**Communication time-out** COM1: exceeds Pr.09-03 setting, COM2: exceeds Pr.09-07 setting	Check if the wiring for the communication is correct
cP10	**Keypad (KPV-CE01) communication time-out** COM1: exceeds Pr.09-03 setting, COM2: exceeds Pr.09-07 setting	1. Check if the wiring for the communication is correct 2. Check if there is any wrong with the keypad
bF	**Brake 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
dEb	When Pr.07-13 is not set to 0 and momentary power off or power cut, it will display dEb during accel./decel. stop.	1. Set Pr.07-13 to 0 2. Check if input power is stable
oSL	It will be displayed when slip exceeds Pr.05-26 setting and time exceeds Pr.05-27 setting.	1. Check if motor parameter is correct (please decrease the load if overload 2. Check the settings of Pr.05-26 and Pr.05-27
bEb	It will be displayed when broken belt detection function is enabled(Pr.08-59), allowance error is higher than Pr.08-61 and detection time exceeds Pr.08-62.	1. Check if the belt is broken 2. Check the settings of Pr.08-60, Pr.08-62 and Pr.08-63
tdEv	It will be displayed when the allowance error of tension PID feedback exceeds Pr.08-63 setting and allowance error detection time exceeds Pr.08-64 setting.	1. Check if the PID feedback is correct 2. Check if the material is broken 3. Check the settings of Pr.08-63 and Pr.08-64

Dimensions

Frame B



Unit: mm[inch]

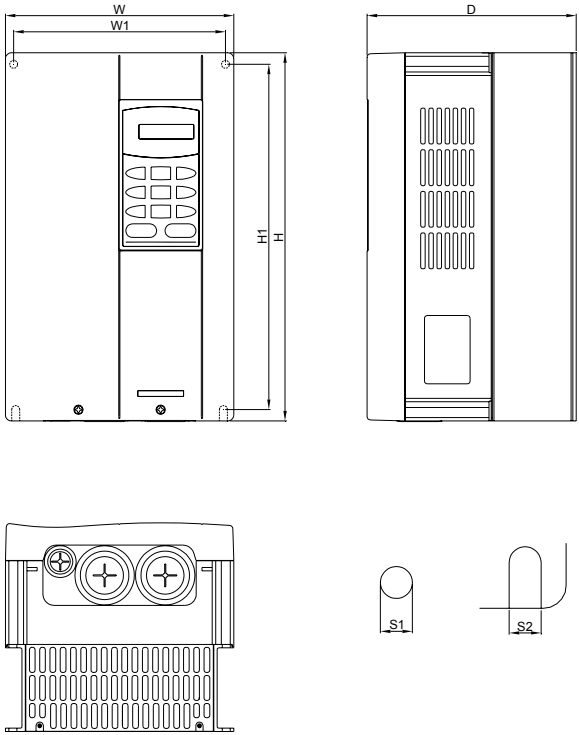
Frame	W	W1	H	H1	D	D1	D2	S1	S2
B1	150.0 [5.91]	135.0 [5.32]	260.0 [10.24]	244.3 [9.63]	160.2 [6.31]	67.0 [2.64]	4.0 [0.16]	8.0 [0.32]	6.5 [0.26]
B2	150.0 [5.91]	135.0 [5.32]	272.1 [10.72]	244.3 [9.63]	183.7 [7.24]	67.0 [2.64]	4.0 [0.16]	8.0 [0.32]	6.5 [0.26]

NOTE

Frame B1: VFD007V23A/43A-2, VFD015V23A/43A-2, VFD022V23A/43A-2

Frame B2: VFD037V23A/43A-2

Frame C



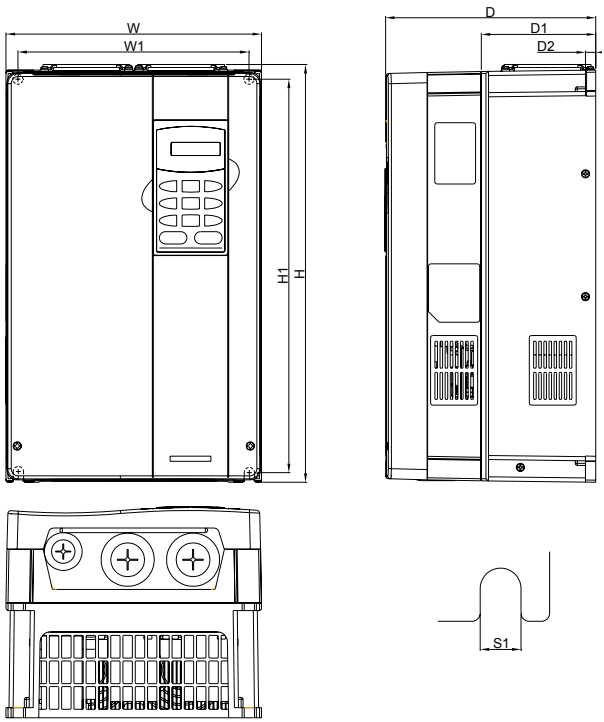
Unit: mm[inch]

Frame	W	W1	H	H1	D	-	-	S1	S2
C	200.0 [7.88]	185.6 [7.31]	323.0 [12.73]	244.3 [9.63]	160.2 [6.31]	-	-	7.0 [0.28]	7.0 [0.28]

NOTE

Frame C: VFD055V23A/43A-2, VFD075V23A/43A-2, VFD110V43B-2

Frame D



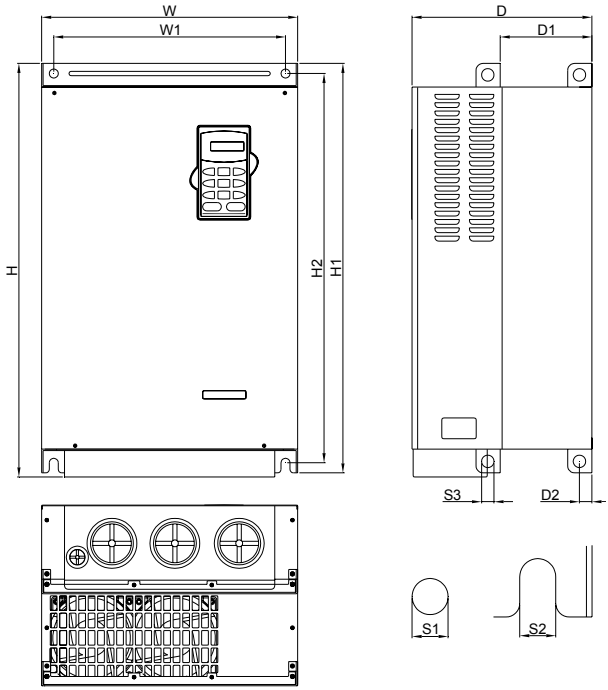
Unit: mm[inch]

Frame	W	W1	H	H1	D	D1	D2	S1	-
D	250.0 [9.85]	226.0 [8.90]	408.2 [16.07]	384.0 [15.13]	205.4 [8.08]	110.0 [4.33]	10.0 [0.39]	10.0 [0.39]	-

NOTE

Frame D: VFD110V23A/43A-2, VFD150V23A/43A-2, VFD185V23A/43A-2, VFD220V23A/43A-2

Frame E



Unit: mm[inch]

Frame	W	W1	H	H1	H2	D	D1	D2	S1	S2	S3
E1	370.0 [14.57]	335.0 [13.19]	-	589.0 [23.19]	560.0 [22.05]	260.0 [10.24]	132.5 [5.22]	18.0 [0.71]	13.0 [0.51]	13.0 [0.51]	18.0 [0.71]
E2	370.0 [14.57]	335.0 [13.19]	595.0 [23.43]	589.0 [23.19]	560.0 [22.05]	260.0 [10.24]	132.5 [5.22]	18.0 [0.71]	13.0 [0.51]	13.0 [0.51]	18.0 [0.71]

NOTE

Frame E1: VFD300V43A-2, VFD370V43A-2, VFD450V43A-2

Frame E2: VFD300V23A-2, VFD370V23A-2, VFD550V43C-2, VFD750V43C-2