CHAPTER 1 INSTALLATION

Inspection

- ☐ Inspect the inverter for any damage that may have occurred during shipping.
- ☐ Check the nameplate on the EI-500 inverter. Verify the inverter unit is the correct one for the application. The numbering system of the inverter is as shown below.

EI- 500 - 01 L

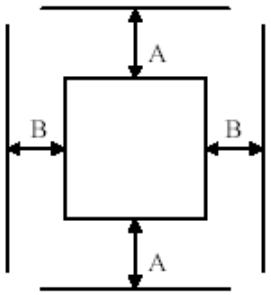
ERIC INVERTER	APPLICABLE MOTOR CAPACITY	INPUT VOLTAGE
	01 : 1 HP	L : 220 V Class
	02 : 2 HP	H : 440 V Class
	03 : 3 HP	
	05 : 5 HP	
	07 : 7.5 HP	
	10 : 10 HP	
	S1 : 1 HP (single-phase input)	
	S2 : 2 HP (single-phase input)	
	S3 : 3 HP (single-phase input)	

Environmental Conditions

- ☐ Verify the ambient condition for the mounting location.
  - Ambient temperature should not be below -10℃ or exceed +50℃.
  - Relative humidity should be less than 90% (non-condensing).
  - Altitude should be below 3,300ft (1,000m).
- ☐ Do not mount the inverter in direct sunlight and isolate it from excessive vibration.

Mounting

- ☐ The inverter must be mounted vertically with sufficient horizontal and vertical space between adjacent equipment. A= Over 6" (150mm), B= Over 2"(50mm).



Dimensions

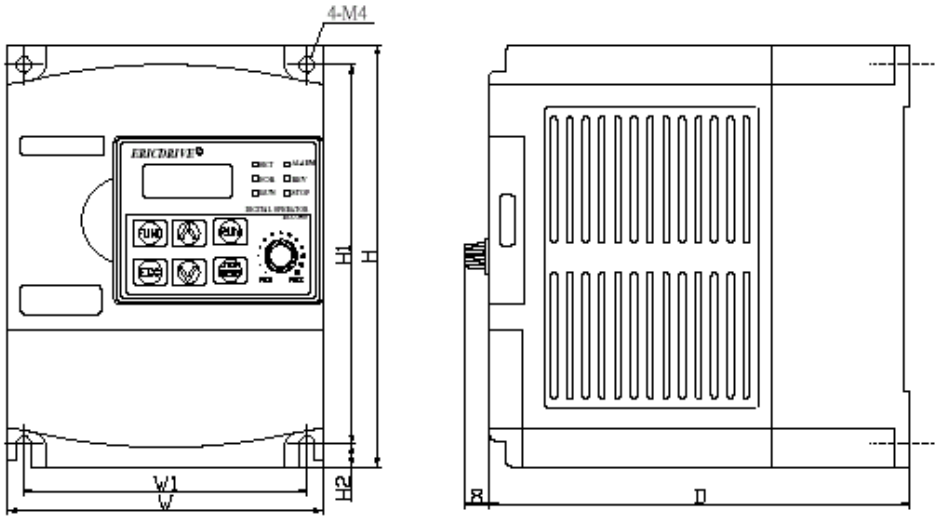


Fig.1

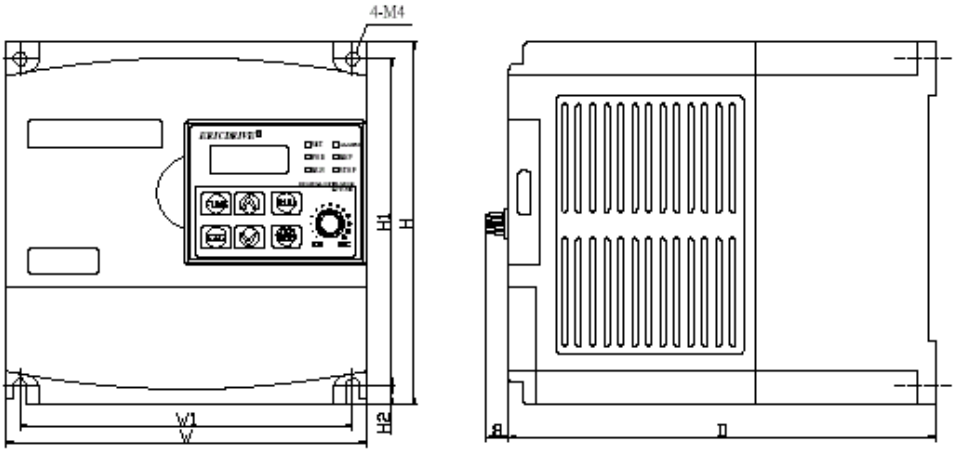
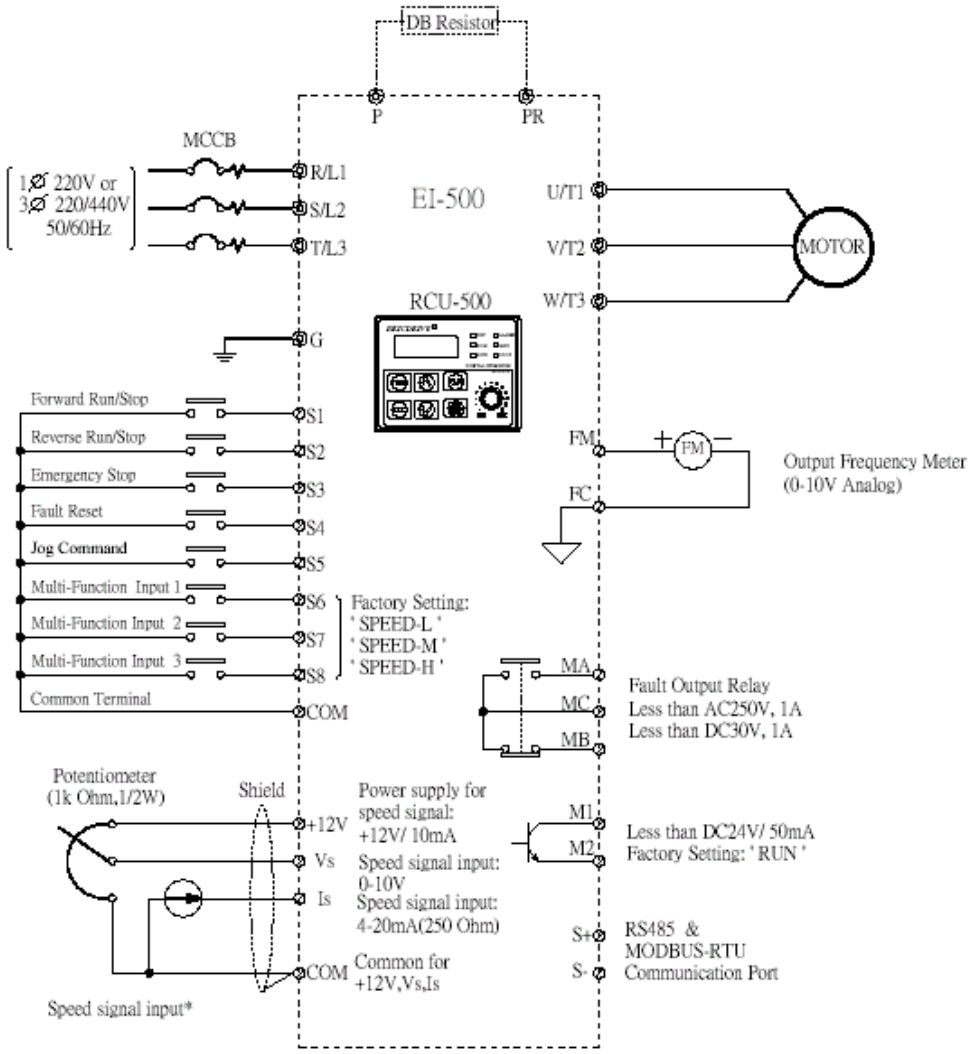


Fig.2

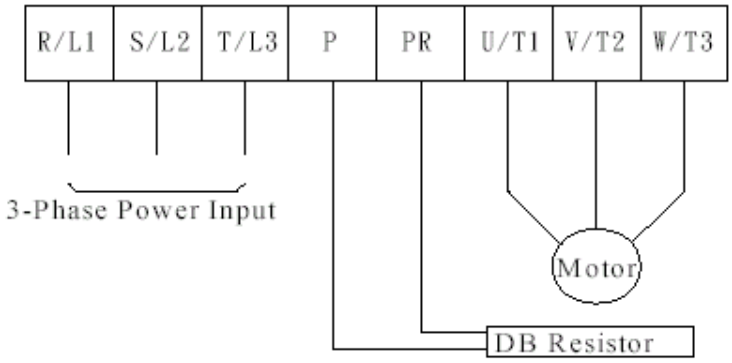
Dimension in mm/Mass in kg

Voltage Class	Capacity (HP)	W	H	D	W1	H1	H2	Mass	Fig.
220V single-Phase	1HP	98	130	131	88	117	7	0.9	1
	2HP	129	130	153	117	118	6	1.5	2
	3HP	150	130	155	137	117	7	1.8	3
220V 3-Phase	1HP	98	130	131	88	117	7	0.9	1
	2HP	129	130	153	117	118	6	1.5	2
	3HP	150	130	155	137	117	7	1.8	3
	5HP								
	7.5HP	187	198	186	175	186	5	5.0	4
440V 3-Phase	1HP	98	130	131	88	117	7	0.9	1
	2HP	129	130	153	117	118	6	1.5	2
	3HP	150	130	155	137	117	7	1.8	3
	5HP								
	7.5HP	187	198	186	175	186	5	5.0	4
	10HP								



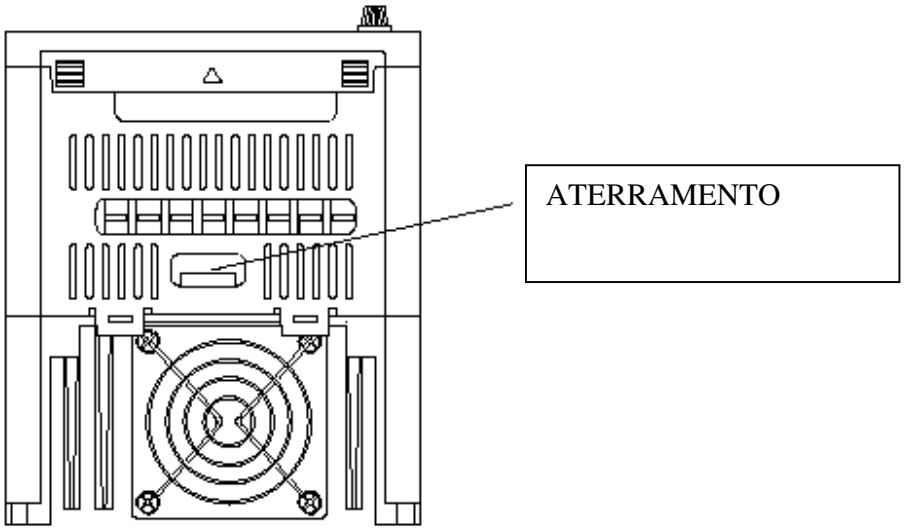
* Analog speed command can be set by voltage, current and both them.

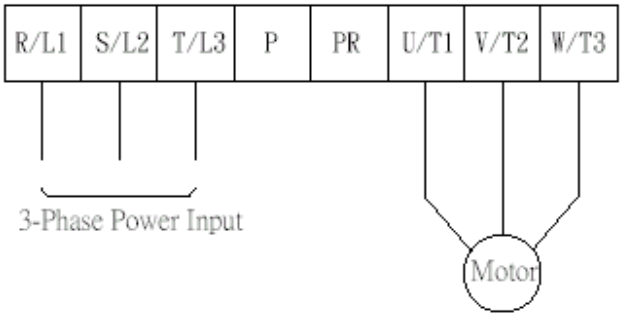
Terminal Description



Symbols	Functions
R/ L1	AC line input terminals 3(1) phase, 200 ~ 230V AC for 220V class units and 380 ~ 460V AC for 440V class units.
S/ L2	
T/ L3	
U/ T1	3-Phase output terminals to motor
V/ T2	
W/ T3	
P	Dynamic braking resistor connection terminals
PR	

⚠ WARNING





■ Control Terminals

1	2	3
MA	MC	MB

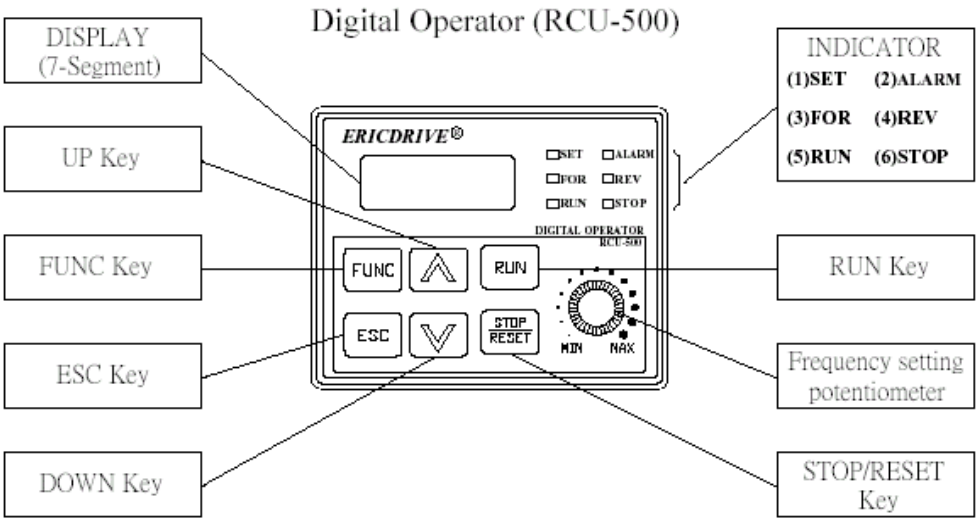
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
COM	S1	S2	S3	S4	S5	S6	S7	S8	COM	+12	Vs	COM	Is	FM	FC	M1	M2	S+	S-

Type		Symbol	Name	Description
Input Signal	Starting Contact Function Selection	S1	Forward Run Command	Forward run when closed and stop when open.
		S2	Reverse Run Command	Reverse run when closed and stop when open.
		S3	Emergency Stop	When the S3 signal is ON output of inverter is turned off. When motor uses an electrical brake to stop, S3 is used to turn off the output signal. When S3 signal is OFF (Not turned off by latching) and S1 signal (or S2 Signal) is ON, motor continues to run.
		S4	Fault Reset	Used for fault reset.
		S5	Jog Frequency Reference	When Jog frequency is ON, operating at low frequency. The direction is set by the S1 (or S2) signal.
		S6, S7, S8	Multi-Function input S6,S7,S8	Used for multi-function input. Default is set to "Step Frequency 1, 2, 3".
		COM	Sequence Common	Common terminal for contact inputs.
	Analog Frequency Setting	+12V	Frequency Reference Power (+12)	Used as power for analog frequency setting. Maximum output is +12V/ 100mA
		Vs	Frequency Reference Input Signal (Voltage)	Used for DC 0 ~ +10V input frequency reference. Input resistance is 20 KΩ
		Is	Frequency Reference Input Signal (Current)	Used for DC 4-20mA input frequency reference. Input resistance is 250 Ω
		COM	Frequency Reference Common Terminal	Common terminal for analog frequency reference signal
Output Signal	Analog Output	FM-FC	Analog/ Digital Output (for External Monitoring)	Output selectable from one of following signal： Output frequency, output voltage, output current, DC voltage. Factory setting is "Output Frequency." Output voltage and output current are 0-12V/ 1mA. Output frequency is 500Hz.
	Relay Contact	MA MC MB	Fault Contact Output	Activates when protective function is operating. AC250V/ 1A, DC30V/ 1A for Contact capacity Fault：MA-MC close (MB-MC open) Normal：MB-MC close (MA-MC open)
	Transistor	M1-M2	Multi-function Output (Open Collector Output)	Use after defining multi-function output terminal. DC24V, 50mA or less.
RS-485		S+, S-	MODBUS Communication Port	RS485 communication port for protocol MODBUS-RTU communication

CHAPTER 2 TEST RUN

■ Digital Operator (RCU-500) Operation

EI-500 offers 4 types of function groups. It can be adjusted by Digital Operator (RCU-500) and input by constant settings directly. The following is an illustration and functions of the RCU-500.



Class	Display	Description
Key	FUNC	Press to change/adjust constant setting.
	ESC	Exit key of function group U, A, b, C
	(Up)	Press to move through constants or to increase/ adjust constant values.
	(Down)	Press to move through constants or to decrease/ adjust constant values.
	RUN	Use to operate inverter.
	STOP/RESET	Press to stop inverter during operation. Press to reset when a fault has occurred.
LED	SET	Lit when user is setting constants by using FUNC key
	ALARM	Lit when the inverter has fault trip.
	FWD	Lit during forward run.
	REV	Lit during reverse run.
	RUN	Lit when at constant speed and blinks when accelerating or decelerating.
	STOP	Lit during the inverter has STOP the output status.

■ **Function Group U (U-01 ~ U-13) Operation Procedures**

1. Move to the group code that needs changing by using [∧] [∨] key.
2. Press [FUNC] key. The keypad LED (**SET**) will turn ON.
3. Use [∧] [∨] keys to set the constant value.
4. Press [∧] [∨] again upon the constant value has been settled. The 7-segment display will blink for 3 times. (i.e. the parameter values have been settled completely.) At the same time, the keypad LED (**SET**) will turn OFF.
5. If the constant value needs to get back to original value before pressing [FUNC], please press [ESC] key (The keypad LED (**SET**) will turn OFF).

■ **A Function Group, b Function Group, C Function Group Operation Procedures**

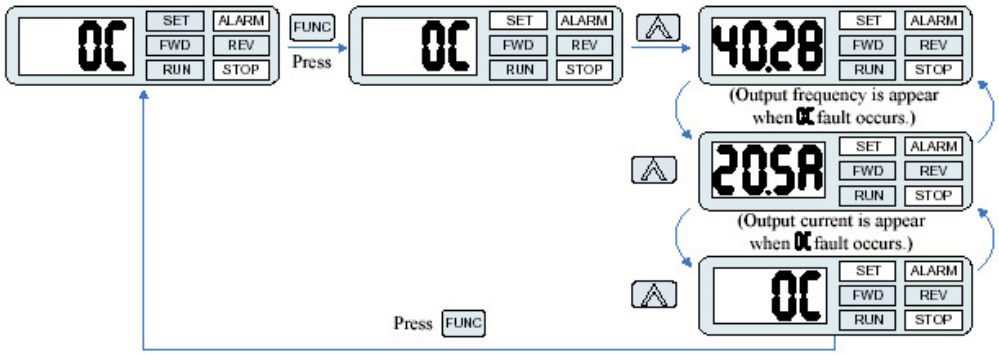
1. Use [∧] [∨] keys to move to desired function group.
2. Press [FUNC] key to enter the desired function group.
3. Use the [∧] [∨] keys to set the constant value to the desired code.
4. Press [FUNC] key (The keypad LED **SET** will turn ON.), and enter to the value of constant code.
5. Use [∧] [∨] keys to set and adjust the constant value.
6. Press [FUNC] key again once the constant value has been settled when the 7-segment display will blink for 3 times, the renew values has been stored in the inverter. Meanwhile, the keypad LED (**SET**) will turn OFF.
7. To exit the function group, please press [ESC] key, then return to the Step 1.

■ **[Example] Change the deceleration time in U-02 from 60 sec to 40 sec.**

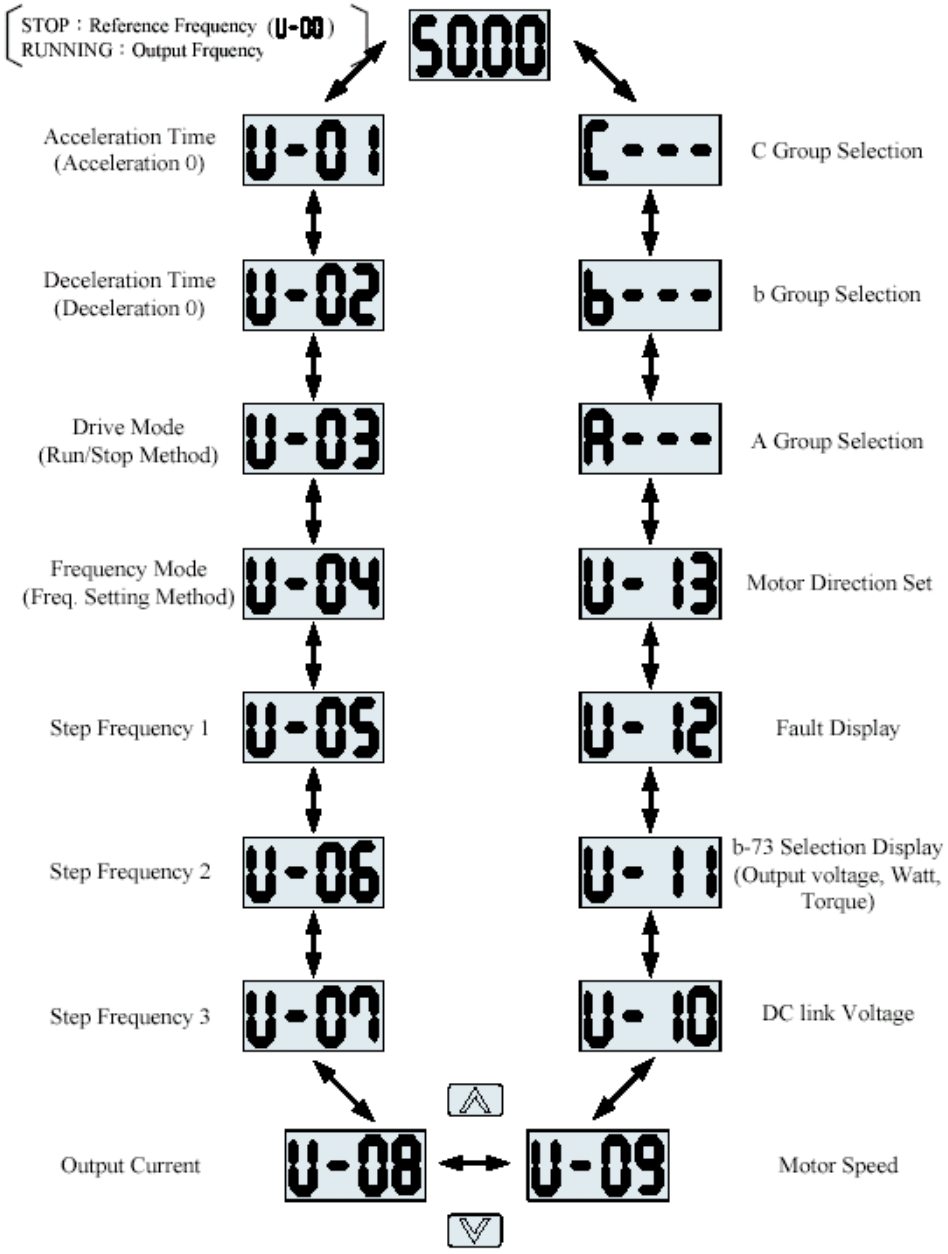
※ After the data setting is finished, press FUNC key. The new data will blinks for 3 times when the data setting is finished. It indicates data programming is completed.

■ **[Example] To monitor current output in U-08 from the inverter while the inverter is running (U-08 cannot be set)**

■ **[Example] To monitor fault type when a fault occurs in U-12**



The fault type is auto-displayed on U-12 when a fault occurs. Frequency, current and operating status (accelerating, decelerating, in constant speeds) may be monitored by using the UP/DOWN key.
Example：Fault occurs when the inverter was accelerating at 40.28Hz, 20.5A, the keypad LED (**ALRAM**) will blink. (The inverter must be turned OFF and turned ON again to remove the OC fault.)


STOP : Reference Frequency (U-00)
RUNNING : Output Frquency
50.00
Acceleration Time (Acceleration 0)
U-01
Deceleration Time (Deceleration 0)
U-02
Drive Mode (Run/Stop Method)
U-03
Frequency Mode (Freq. Setting Method)
U-04
Step Frequency 1
U-05
Step Frequency 2
U-06
Step Frequency 3
U-07
Output Current
U-08
U-09
Motor Speed
U-10
DC link Voltage
U-11
b-73 Selection Display (Output voltage, Watt, Torque)
U-12
Fault Display
U-13
Motor Direction Set
A---
A Group Selection
b---
b Group Selection
C---
C Group Selection

Test Run

〔 Operation Reference：RUN key, STOP/RESET key of digital operator
Frequency Reference：Potentiometer of digital operator 〕 （Factory Default）

1. Turn the power ON and set U-03=0, U-04=1. (Factory Default)
2. Press RUN key. LED **RUN** and **FOR (REV)** will lit, **STOP** will lit.
3. Adjust potentiometer of digital operator to change motor speed.
4. Press STOP/RESET key for the motor to coast to stop. The LED of **RUN** and **FOR (REV)** will turn OFF and **STOP** will turn ON.

〔 Operation Reference：RUN key, STOP/RESET key of digital operator
Frequency Reference：∧ key, ∨ key of digital operator 〕

1. Turn the power ON and set U-03=0, U-04=0.
2. (Return 7-segment display to U-00.) Use FUNC key, ∧ key, ∨ key to set the operation frequency value. (It displays the set frequency value at stop.)
3. Press RUN key, the motor will start running. The output frequency is show on the digital operator at the same time.
4. Press STOP/RESET key, the motor will decrease to stop. In the meantime, the frequency value appears on the digital operator.

〔 Operation Reference：External terminal (Terminal S1, S2)
Frequency Reference：External terminal (Terminal Vs or Is) 〕

1. Turn the power of motor ON and set U-03=1, U-04=2.
2. Have the external potentiometer connect to terminal +12V, Vs, COM to adjust the value of potentiometer. The digital operator displays the frequency value.
3. To make the motor forward run, the terminal S1 and COM need to be closed.
4. Have the terminal S1 to be opened and terminal S2 and COM to be closed so that the motor does reverse run.
5. The motor decreases to stop when terminal S2 is opened. The digital operator displays the frequency value set by external potentiometer.

■ Function Group U (Drive Group)

Code	Description	Setting Range	Units	Factory Default	Adj. During Run	Ref. Page
U-00	Reference Frequency during stop Output Frequency during running	0.00 to Max. output frequency (A-20)	0.01	00.00 [Hz]	Yes	31
U-01	Acceleration Time	0.0 to 999.9 [sec]	0.1	10.0 [sec]	Yes	31
U-02	Deceleration Time	0.0 to 999.9 [sec]	0.1	20.0 [sec]	Yes	31
U-03	Drive Mode (Run/Stop Method)	0 (Digital Operator) 1 External Terminal Pattern 1 (S1/S2-1) 2 External Terminal Pattern 2 (S1/S2-2) 3 (RS485)	-	0	No	32
U-04	Frequency Mode (Freq. Setting Method)	0 [▲][▼] key of RCU-500 (U-00) 1 Potentiometer of RCU-500 2 External Terminal (Vs) 3 External Terminal (Is) 4 External Terminal (Vs+Is) 5 (RS485) Communication Port	-	1	No	33
U-05	Step Frequency 1	0.00 to Max. Frequency(A-20)	0.01	10.00 [Hz]	Yes	35
U-06	Step Frequency 2			20.00 [Hz]		
U-07	Step Frequency 3			30.00 [Hz]		
U-08	Output Current	-	[A]	-	-	36
U-09	Motor Speed	-	[rpm]	-	-	36
U-10	DC link Voltage	-	[V]	-	-	36
U-11	b-73 Selection Display	0 : Inverter Output Voltage 1 : Inverter Output Watt 2 : Inverter Output Torque	-	-	-	37
U-12	Fault Display	-	-	0	-	37
U-13	Motor Direction Set	F (Forward) r (Reverse)	-	F (Forward)	Yes	38
A- - -	A Group Selection					38
b- - -	b Group Selection					38
C- - -	C Group Selection					38

■ Function Group A (Standard Group)

Code	Description	Setting Range	Units	Factory Default	Adj. During Run	Ref. Page
A-00	Jump to Desired Code #	1 to 99	1	3	Yes	39
A-03	Run Prevention	0 (None) 1 (Forward Prev) 2 (Reverse Prev)	-	**0**	No	39
A-05	Acceleration Pattern	0 (Linear) 1 (S-Curve) 2 (U-Curve) 3 (Minimum) 4 (Optimum)	-	**0**	No	39
A-06	Deceleration Pattern	0 (Linear) 1 (S-Curve) 2 (U-Curve) 3 (Minimum) 4 (Optimum)	-	**0**	No	39
A-07	Stop Mode	0 (Decel) 1 (DC-brake) 2 (Free-run)	-	**0**	No	41
A-08	DC Injection Braking Frequency	A-22 to 50/60 [Hz]	0.01	5.00 [Hz]	No	43
A-09	DC Injection Braking ON-DELAY Time	0 to 60 [sec]	0.01	0.10 [sec]	No	
A-10	DC Injection Braking Voltage	0 to 200 [%]	1	50 [%]	No	
A-11	DC Injection Braking Time	0 to 60 [sec]	0.1	1.0 [sec]	No	
A-12	Starting DC Injection Braking Voltage	0 to 200 [%]	1	50 [%]	No	44
A-13	Starting DC Injection Braking Time	0 to 60 [sec]	0.1	0.0 [sec]	No	
A-20	Maximum Output Frequency	40 to 400 [Hz]	0.01	50 / 60 [Hz]	No	45
A-21	Maximum Voltage Output Frequency	30 to (A-20)	0.01	50 / 60 [Hz]	No	
A-22	Minimum Output Frequency	0.1 to 10 [Hz]	0.01	0.10 [Hz]	No	
A-23	Frequency Limit Selection	0 (No) 1 (Yes)	-	0	No	45
A-24	Low Limit Frequency	A-22 to A-25	0.01	0.00 [Hz]	No	
A-25	High Limit Frequency	A-24 to A-20	0.01	50 / 60 [Hz]	No	
A-26	Manual/Auto Torque Boost Selection	0 (Manual) 1 (Auto)	-	Manual 0	No	46
A-27	Manual - Torque Boost in Forward Direction	0.0 to 15.0 [%]	0.1	2.0 [%]	No	
A-28	Manual - Torque Boost in Reverse Direction		0.1	2.0 [%]	No	

※ Code A-08, A-09, A-11 appears only when A-07=1.

※ Code A-24, A-25 appears only when A-23=1.