ZVF330 Series Simple User Manual

1. Foreword

Thanks for using ZVF330 Series inverter .The inverter use high quality components, material and adopt the latest DSP control technoloogy . The user manual provide installation, parameter setting, thourbleshooting ,and other relevant considerations for the users.

In order to ensure proper installation and operation of the inverter. Please read the user manual before installtion and keep it and distribute to the end users. For more details, please visit our webite to download the user manual.

The following items for special need to notice:

● Be sure to turn off the power when wiring .

● Electronic components inside the inverter are particularly sensitive to static electricity. So don't insert foreign objects into the inverter and don't touch the main circuit board.

● Even after cutting off the AC power, if the indicators on the keypads doesn't light off, it means there is high voltage inside the inverter and it is still very danagerous. Do not touch the inner circuit or components .

● Make sure good connection for the ground terminal of the inverter .

● Never connect the output terminal U, V, W to AC power.

2. Product Introduction

2.1 Inspection upon Arrival

This product is guaranteed a high level of quality with strict outgoing inspection, crush proof and shockproof packaging. But this does not preclude damage to the product due to heavy collision or strong extrusion. So it is necessary to unpack the inverter upon arrival and perform these steps:

① Check whether there is a deformed or damaged casing, or any shattered component.

② Check the specification label of the inverter and make sure it matches the product part number you've ordered.

③ Check whether the items in the packing list are in readiness or not.

If there is any problem with the above-mentioned contents, please contact the supplier or Our Company immediately.
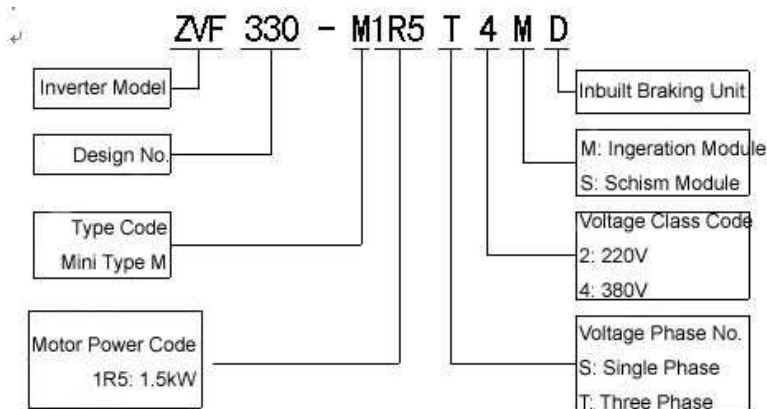
2.2 Demonstration of the Model

ZVF 330 - M1R5 T 4 M D

- Inverter Model
- Design No.
- Type Code / Mini Type M
- Motor Power Code / 1R5: 1.5kW
- Inbuilt Braking Unit
- M: Ingeration Module / S: Schism Module
- Voltage Class Code / 2: 220V / 4: 380V
- Voltage Phase No. / S: Single Phase / T: Three Phase

Fig.2-1 Inverter Model Demonstration

2.3 Specification Label

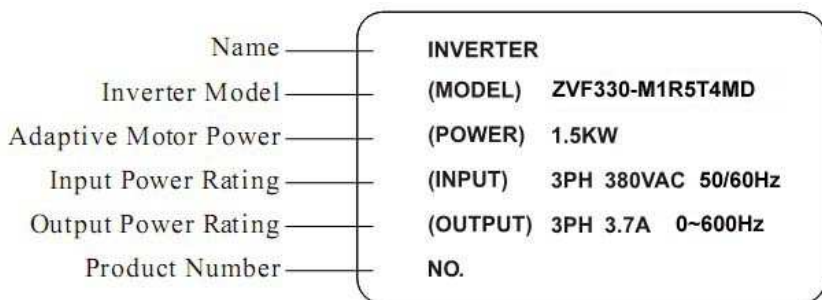|	
Name	INVERTER
Inverter Model	(MODEL) ZVF330-M1R5T4MD
Adaptive Motor Power	(POWER) 1.5KW
Input Power Rating	(INPUT) 3PH 380VAC 50/60Hz
Output Power Rating	(OUTPUT) 3PH 3.7A 0~600Hz
Product Number	NO.

Fig.2-2 Inverter Label
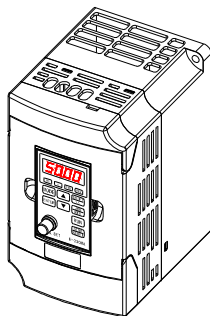
2.4 Type Style

Fig.2-3 Molded Wall-Mounted

2.5 Models and Specifications

Table 2-1　　Models and Specifications

Inverter Model（M: Mini Type）	Input Voltage (V)	Rated Output Current (A)	Adaptive Motor Power (kW)
ZVF330-M0R4T2/S2	220	2.4	0.4
ZVF330-M0R7T2/S2	220	4.5	0.75
ZVF330-M1R5T2/S2	220	7.0	1.5
ZVF330-M2R2T2/S2	220	10.0	2.2
ZVF330-M0R7T4	380	2.5	0.75
ZVF330-M1R5T4	380	3.7	1.5
ZVF330-M2R2T4	380	5.0	2.2

3.Inverter Wiring

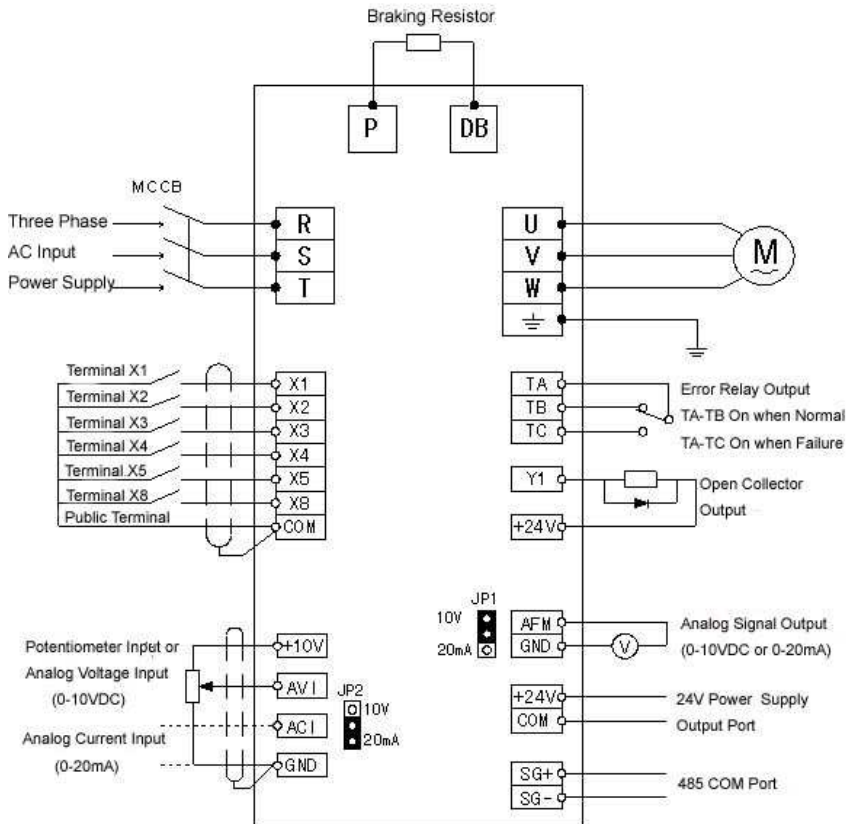## 3.1 Basic Wiring Diagram for Inverter

Fig.3-1 Basic Wiring Diagram

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示

> The jumper wire JP2 is used to switch between analog input ACI voltage and current .
>
> The jumper wire JP1 is used to switch between the analog output AFM voltage and current .

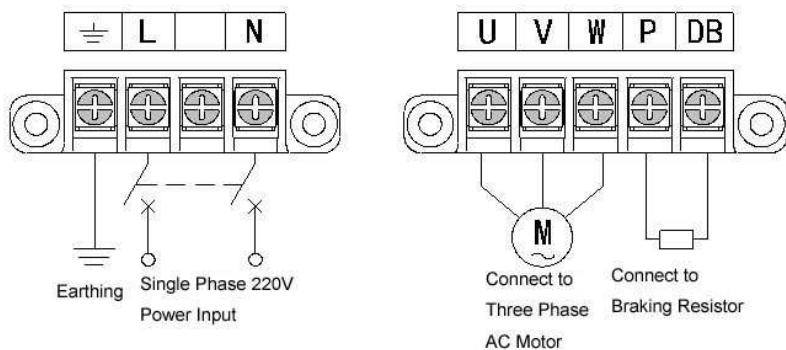## 3.2 Main Circuit Terminal

Fig.3-2 Diagram 1 for Main Circuit Terminal
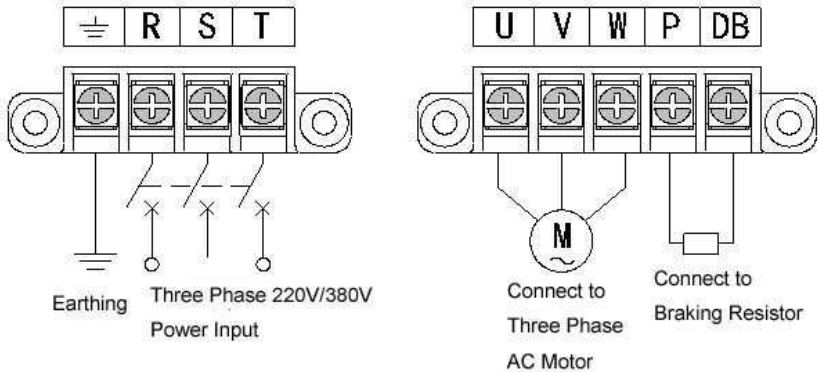Applicable to the model：**ZVF330-M0R4S2～M2R2S2**

Fig.3-3 Diagram 2 for Main Circuit Terminal
Applicable to the model**: ZVF330-M0R4T2～M2R2T2**
ZVF330-M0R7T4～M2R2T4

3.3 Description on Control Circuit Terminals

1. Control circuit terminals are shown in the figure 3-4
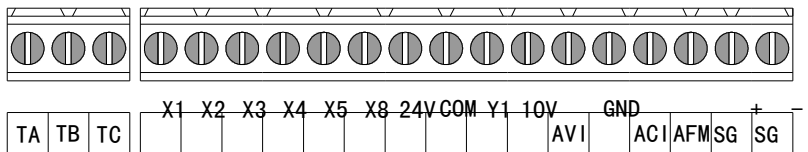
Fig.3-4 Control Circuit Terminal

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2. Description on Control Circuit Terminals

Table 3-1   Function Description on Control Circuit Terminal

Type	Terminal Symbol	Function Description	Electrical Specification
Public port	COM	Digital signal public terminal	
Multi-function Input Terminal	X1	Valid only when there is a short circuit between Xn (n=1, 2, 3, 4, 5, 6, 7, 8) and COM. The functions can be set by the parameter F5.00~F5.07separately	INPUT, 0~24V power level, low level valid, 5Ma
	X2		
	X3		
	X4		
	X5		
	X8		
Multi-Function output terminal	Y1	Multi-function open collector output is defined as on-off output terminal, whose function is set by the parameter F6.00~F6.01 with reference of COM	OUTPUT, Maximum load Current I≤50mA

Type	Terminal Symbol	Function Description	Electrical Specification
Analog Input terminal	+10V	External analog preset power supply, connecting GND, AVI terminal with potentiometer. The frequency can be set as required.	INPUT, 10VDC voltage
	AVI	Analog voltage signal input,with reference of GND	INPUT, 0～10V DC Voltage
	ACI	Analog current signal input,with reference of GND	INPUT, 0~20mA DC Current
Public port	GND	Analog signal public port	
Analog Output Terminal	AFM	Programmable analog voltage output. Connect with the voltmeter . The corresponding output 0 to the maximum frequency , with reference of GND .	OUTPUT, 0～10VDC Voltage Or 0～20mA DC Current

Type	Terminal Symbols	Function Description	Electrical Specifications
Power Supply Interface	+24V	24VDC Power supply output (control Power supply)	24VDC-100mA
Programmable output terminal	TA	Relay contact output. when normal, TA-TB turns on and TA-TC turns off. when there is action ,TA-TB turns off and TA-TC turns on, This function is set by F6.02	Contact rated value: NO: 240VAC-3A NC: 240VAC-1A
	TB		
	TC		
Communication Port	SG+	Communication Signal Positive Port	
	SG-	Communication Signal Negative Port	

4.Keypad and Its Operation

4.1. Keypad Diagram
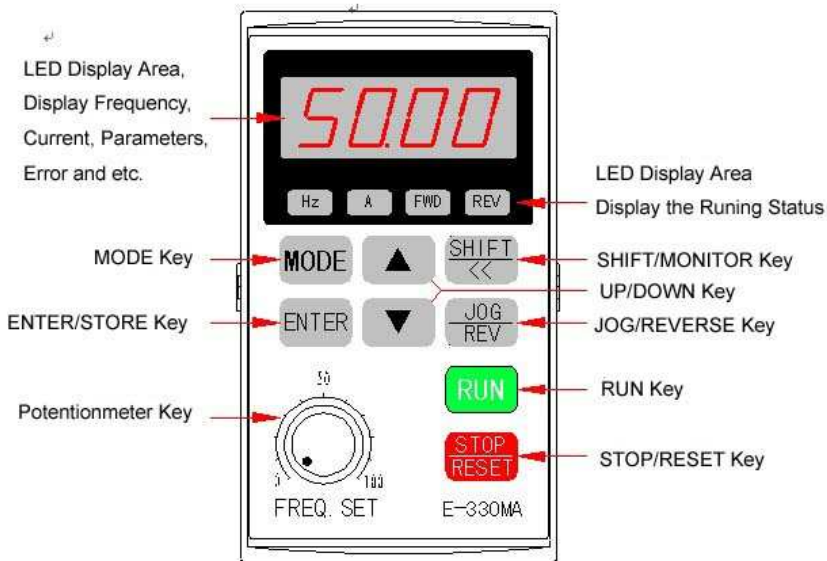
Fig.4-1 E-330MA Operation Panel

4.2 Use of Operation Panel

Modification of parameter value for function (Modify the parameter value for F8.02 JOG function from 5.00hz to 20.00Hz)
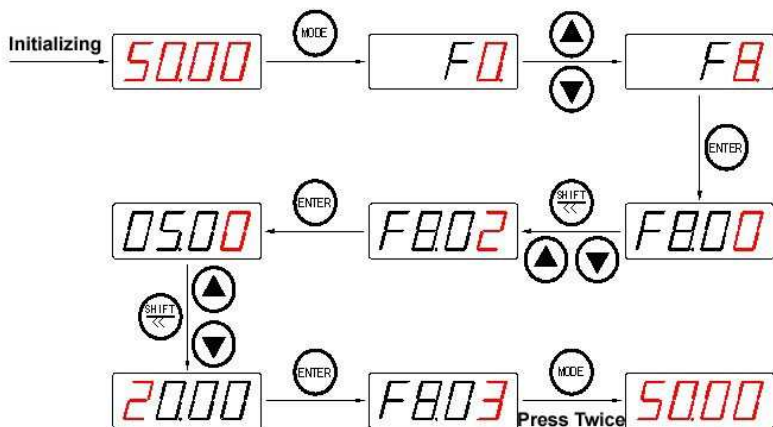
5. Function Parameters

- The marked " √ " Indicate the setting value of parameter can be modified no matter when the inverter stop or running.
- The marked "X" indicates the setting value of parameter can be modified only when the inverter stop, and can not be modified when the inverter is running .
- The marked " _" indicates the parameter can be displayed only and can not be modified .

提示

5.1 F0 Group Basic Function

Code	Name	Setting Range	Min. Unit	Factory setting	Modification	Running
F0.00	Speed control mode	0： NO PG vector control 1： V/F control 2： Torque control	1	1		×
F0.01	Running command channel	0: Keyboard command channel 1: Terminal command channel 2: Communication command channel	1	0		×

F0.02	Keyboard and terminal UP/Down setting	0: Valid, save the parameters when the inverter is power off 1: Valid ,the value can not be saved when the inverter is powered off 2: UP/DOWN setting is valid 3: Valid during running, clear when stop .	1	0	√
F0.03	Frequency command selection	0：Keyboard or encoder setting 1: AVI 2: ACI 3: AVI+ ACI 4: keyboard potentiometer setting 5: PID control setting 6: Remote communication setting 7: External pulse setting 8: AVI(host)±ACI(assist) combination setting	1	0	√
F0.04	Maximum output frequency	10.00～600.00Hz	0.01 Hz	50.00Hz	×
F0.05	Upper frequency limit	F0.06～F0.04 (Max.Freuency）	0.01 Hz	50.00Hz	√
F0.06	Lower frequency limit	0.00～F0.05 (upper frequency limit)	0.01 Hz	0.00Hz	√
F0.07	Keypad setting frequency	0.00~F0.04（Max.frequency）	0.01 Hz	50.00Hz	√

F0.08	Acceleration time 1	0.1～3600.0s	0.1s	Depend on model	√
F0.09	Deceleration time 1	0.1～3600.0s	0.1s	Depend on model	√
F0.10	Running direction selection	0: Forward (the default running direction) 1: Reverse 2: Forbid reverse running	1	0	×
F0.11	Carrier frequency	1.0～15.0kHz	0.1 kHz	Depend on model	√
F0.12	Motor parameters autotuning	0: No action 1: Rotation autotuning 2: Static autotuning	1	0	×
F0.13	Restore parameters	0: No action 1: Restore the default value 2: Clear fault records	1	0	×
F0.14	AVR Fcuntion	0: Disable 1: Enable all the time 2: Disabled during deceleration	1	0	√
F0.15 ~ F0.16	Reserved				-

5.2 F1 Group Start and Stop Control

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F1.00	Start Mode	0: Start directly 1: DC braking and start 2: Speed tracking starting	1	0	✕
F1.01	Direct starting frequency	0.00～50.00Hz	0.01 Hz	1.50Hz	√
F1.02	Starting frequency maintain time	0.0～50.0s	0.1s	0.0s	√
F1.03	DC braking current before start	0.0～150.0%	0.1%	0.0%	√
F1.04	DC braking time before start	0.0～50.0s	0.1s	0.0s	√
F1.05	Stop mode	0：Decelerate stop 1：Coast/Free stop	1	0	√
F1.06	Starting frequency of DC braking at stopping	0.00～F0.04 （Max.frequency）	0.01 Hz	0.00Hz	√

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5.2 F1 Group Start and Stop Control (continued)

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F1.07	Braking wait time at stopping	0.0～50.0s	0.1s	0.0s	√
F1.08	DC braking current at stopping	0.0～150.0%	0.1%	0.0%	√
F1.09	DC braking time at stopping	0.0～50.0s	0.1s	0.0s	√
F1.10	Dead time of FWD/REV	0.0～3600.0s	0.1s	0.0s	√
F1.11	Terminal running protection selection when power on	0：Command invalid when powered on 1：Command valid when powered on	1	0	√
F1.12	Input/Output terminal selection	0x000～0x7FF	1	0x000	√

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5.3 F2 Group Motor Parameters

Code	Name	Setting Range	Min. Unit	Factory setting	Modification Running
F2.00	Inverter Type	0：G Type 1：P Type	1	Depend on model	×
F2.01	Motor rated power	0.4～700.0kW	0.1kW	Depend on model	×
F2.02	Motor rated frequency	0.01～600.00Hz	0.01Hz	50.00Hz	×
F2.03	Motor rated speed	0～36000rpm	1rpm	Depend on model	×
F2.04	Motor rated voltage	0～460V	1V	Depend on model	×
F2.05	Motor rated current	0.1～2000.0A	0.1A	Depend on model	×
F2.06	Motor stator resistance	0.001～65.535Ω	0.001Ω	Depend on model	√
F2.07	Motor rotor resistance	0.001～65.535Ω	0.001Ω	Depend on model	√

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F2.08	Motor leackage inductance	0.1～6553.5mH	0.1mH	Depend on model	√
F2.09	Motor mutual inductance	0.1～6553.5mH	0.1mH	Depend on model	√
F2.10	Current without load	0.01～655.35A	0.01A	Depend on model	√

5.4 F3 Group Vector Control

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F3.00	Proportional gain 1 of speed loop	0～10000	1	15	√
F3.01	Integration time 1 of speed loop	0.01～100.00s	0.01s	2.00s	√
F3.02	Low switching point frequency	0.00～F3.05	0.01Hz	5.00Hz	√
F3.03	Proportional gain 2 of speed loop	0～10000	1	10	√

F3.04	Integration time 2 of speed loop	0.01～100.00s	0.01s	3.00s	√
F3.05	High switching point frequency	F3.02～F0.04 (Max.frequency)	0.01 Hz	10.00Hz	√
F3.06	Slip compensation rate of VC	50～200%	1%	100%	√
F3.07	Torque upper-limit setting	0.0～200.0% (Inverter rated current)	0.1%	150.0%	√
F3.08	Speed filter coefficients	0.000～1.000	0.001	0.125	√
F3.09	Without load current compensation coefficients	0.000～9.999	0.001	0.800	√

5.5 F4 Group V/F Control

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F4.00	V/F Curve setting	0: Linear Curve 1: Square V/F curve	1	0	×
F4.01	Torque Boost	0.0%: (auto) 0.1~30.0%	0.1%	0.0%	√
F4.02	Torque boost cutoff	0.0~50.0% (Relative to the rated motor frequency)	0.1%	20.0%	×
F4.03	V/F Slip compensation limit	0.0~100.0%	0.1%	0.0%	√
F4.04	Auto energy saving selection	0: Disable 1; Enabled	1	0	×
F4.05 ~ F4.12	Reserved				-

5.6 F5 Group Input terminal

Code	Name	Setting Range	Min. Unit	Factory setting	Modification Running
F5.00	X1 terminal function selection	0: No function 1: Forward running 2: Reverse running 3: 3-Wire running control 4: Jog forward control	1	1	×
F5.01	X2 terminal function selection	5: Jog reverse control 6: Coast to stop 7: Reset fault;	1	2	×
F5.02	X3 terminal function selection	8: External fault input 9: Frequency UP command（UP）	1	7	×
F5.03	X4 terminal function selection	10: Frequency DOWN command（DOWN） 11: Clear frequency UP/DOWN	1	0	×
F5.04	X5 terminal function selection	12; Multi-step speed terminal 1 13: Multi-step speed terminal 2	1	0	×
F5.05	X6 terminal function selection	14: Multi-step speed terminal 3 15: Multi-step speed terminal 4	1	0	×
F5.06	X7 terminal function selection		1	0	×

F5.07	X8 terminal function selection	16: Acceleration and deceleration time selection 17: PID control pause 18: Traverse frequency pause (stop at the current frequency) 19: Traverse frequency reset (return to the centre frequency). 20: Acceleration and deceleration prohibition 21: Disable torque control 22: Clear frequency acc.and dec. settings 23: DC braking when stopping 24: External pulse input 25: Frequency switch to ACI. 26: Frequency switch to ACI. 27: Reserved 28: Decelerate Stop	1	0	$\times$
F5.08	ON/OFF filter times	1～100	1	5	√
F5.09	Terminal control running mode	0：2-wire control mode 1 1：2-wire control mode 2 2：3-wire control mode 1 3：3-wire control mode 2	1	0	$\times$

5.6 F5 Group Input terminal (continued)

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F5.10	UP/DOWN terminal change speed rate	0.01～50.00Hz/s	0.01Hz/s	0.50Hz/s	√
F5.11	AVI lower limit	0.00～10.00V	0.01V	0.00V	√
F5.12	AVI lower limit corresponding setting	-100.0～100.0%	0.1%	0.0%	√
F5.13	AVI upper limit	0.00～10.00V	0.01V	10.00V	√
F5.14	AVI upper limit corresponding setting	-100.0～100.0%	0.1%	100.0%	√
F5.15	AVIinput filter time	0.00～10.00s	0.01s	0.10s	√
F5.16	ACI lower limit	0.00～10.00V	0.01V	0.00V	√

F5.17	ACI lower limit corresponding setting	-100.0～100.0%	0.1%	0.0%	√
F5.18	ACI upper limit	0.00～10.00V	0.01V	10.00V	√
F5.19	ACI upper limit corresponding setting	-100.0～100.0%	0.1%	100.0%	√
F5.20	ACI input filter time	0.00～10.00s	0.01s	0.10s	√
F5.21	Maximum pulse input	0.0～20.0kHz	0.1kHz	20.0kHz	√
F5.22	Pulse input lower limit	0.0～20.0kHz	0.1kHz	0.0kHz	√
F5.23	Pulse input lower limit corresponding setting	-100.0～100.0%	0.1%	0.0%	√
F5.24	Pulse input upper limit	0.0～20.0kHz	0.1kHz	10.0kHz	√
F5.25	Pulse input upper limit corresponding setting	-100.0～100.0%	0.1%	100.0%	√

| F5.26 | Center voltage hysteresis loop width | 0.00～10.00V | 0.01V | 0.15V | √ |
| F5.27 ～ F5.30 | Reserved | | | | - |

5.7 F6 Group Output Terminal

Code	Name	Setting Range	Min. Unit	Factory setting	Modification	Running
F6.00	Y1 output selection	0： No output		1		√
F6.01	Y2 output selection	1： Forward running 2： Reverse tunning 3： Fault output 4： Frequency level detection FDT arrival		2		√
F6.02	Relay output selection	5： frequency reached 6： Zero speed running 7： Upper limit frequency reached 8： Lower frequency limit reached 9： Running 10： Reserved	1	3		√

F6.03	AFM output selection	0：Running frequency 1：Setting frequenc 2：Runnign RPM 3：Output current 4：Output Voltage 5：Output power 6：Output torque 7：Analog AVI input 8：Analog ACI input 9～14：Reserved	1	0	√
F6.04	AFM output lower limit	0.0～100.0%	0.1%	0.0%	√
F6.05	The lower limit corresponding to the AFM output	0.00～10.00V	0.01V	0.00V	√
F6.06	AFM output upper limit	0.0～100.0%	0.1%	100.0%	√
F6.07	The upper limit corresponding to the AFM output	0.00～10.00V	0.01V	10.00V	√
F6.08	DFM output selection	0～14（same as F6.03）	0	0	√
F6.09	DFM output lower limit	0.0～100.0%	0.1%	0.0%	√

F6.10	The lower limit corresponding to the DFM output	0.0～10.0kHz		0.1 kHz	0.0kHz	√
F6.11	DFM output upper limit	0.0～100.0%		0.1%	100.0%	√
F6.12	The lower limit corresponding to the DFM output	0.0～10.0kHz		0.1 kHz	10.0 kHz	√
F6.13	Relay time delay swith on time	0.1～3600.0s		0.1s	0.0s	√
F6.14	Relay time delay off time	0.1～3600.0s		0.1s	0.0s	√
F6.15	Reserved					-

5.8 F7 Group-Human-Machine Interface

Code	Name	Setting Range	Min. Unit	Factory setting	Modification Running
F7.00	user password	0～65535	1	0	√
F7.01	Reserved			0	-
F7.02	Parameter copy	0：No operation 1：All parameters will be uploaded to keyboard 2：All parameters will be download to the machine. (Exept F2 group) 3：Reserved 4：The keyboard function parameters are download to the machine. (All)	1	0	×
F7.03	REV/JOG function selection	0：Jog operation 1: FWD/REV switching 2: Clear UP/DOWN setting 3: Reverse running	1	0	×
F7.04	STOP/RESET key stop function selection	0: Valid when keypad control 1: Valid when keypad or terminal control 2: Valid when keypad or communication control 3: Always valid	1	0	√
F7.05	Reserved			0	-

F7.06	Running state display parameter selection	0～0xFFFF BIT0：Running frequency BIT1：Setting frequency BIT2：DC bus voltage BIT3：Output voltage BIT4：Output current BIT5：running rotation speed BIT6：output power BIT7：output torque BIT8：PID setting BIT9：PID feedback BIT10：Input terminal state BIT11：Output terminal state BIT12：Anaglog AVI value BIT13：Anaglog ACI value BIT14：The current step of multi-step BIT15：Roeque setting value	1	0x00FF	√
F7.07	Stop state display parameter selection	1～0x3FF BIT0：setting frequency BIT1：DC bus voltage BIT2：Input terminal state BIT3：Output terminal state BIT4：PID setting value BIT5：PID feedback value BIT6：analog AVI value BIT7：Analog ACI value BIT8：The current step of multi-step BIT9：Torque setting value BIT10~BIT15 : Reserved	1	0x40F	√

F7.08	Rectifier module temperature	0～100.0℃	0.1℃		-
F7.09	IGBT module temperature	0～100.0℃	0.1℃		-
F7.10	Software version	0.00～99.9	1.00		-
F7.11	Accumulated running time	0～65535h	1h	0	-
F7.12 ~ F7.13	Reserved				-
F7.14	The previous two fault type	0～29 0: No fault（nonE） 1: Over current when acceleration（ocA） 2: Over current when decleration（ocd） 3: Over-current when constant speed running （ocn） 4: Over –voltage when when acceleration（ovA） 5: Over-voltage when decleration（ovd） 6: Over-voltage when constant running （ovn） 7: Over-voltage when stopping （ovS） 8: DC bus under voltage （Lv） 9: Input phase failure （LP） 10: Output short circuit（SC） 11: Inverter overheat （OH1） 12: Motor overload （OL1）			-

F7.15	The previous fault type	13: Inverter overload （OL2） 14: External fault （EF） 15: RS485 communication fault （CE-1） 16: Reserved 17: Current detection fault（ItE）			
F7.16	Thecurrent fault type	18: Keypad communication fault（CE-4） 19: Autotuning falut （tE） 20: EEPROM fault （EEP） 21: PID feedback fault （PIDE） 22～24: Recerved 25: dCE 26～27: Reserved 28: Output phase failure （SPO） 29: Reserved			
F7.17	The current fault running frequency	0.00～600.00Hz	0.01 Hz		-
F7.18	The current fault output current	0.1～3000.0A	0.1A		-
F7.19	The current fault DC bus voltage	0～1000V	1V		-
F7.20	The current fault input terminal state	0～0xFFFF	1	0	-
F7.21	The current fault output terminal state	0～0xFFFF	1	0	-

5.9 F8 Group-Enhanced Function

Code	Name	Setting Range	Min. Unit	Factory setting	Modification	Running
F8.00	Acceleration time 2	0.1～3600.0s	0.1s	Depend on model		√
F8.01	Deceleration time 2	0.1～3600.0s	0.1s	Depend on model		√
F8.02	Jog running frequency	0.00～F0.04（Max.）	0.01 Hz	5.00Hz		√
F8.03	Jog acceleration time	0.1～3600.0s	0.1s	Depend on model		√
F8.04	Jog deceleration time	0.1～3600.0s	0.1s	Depend on model		√
F8.05	Skip frequency	0.00～F0.04（Max.frequency）	0.01 Hz	0.00Hz		√
F8.06	Skip frequency bandwidth	0.00～F0.04（Max.frequency）	0.01 Hz	0.00Hz		√

F8.03	Jog acceleration time	0.1～3600.0s	0.1s	Depend on model	√
F8.04	Jog deceleration time	0.1～3600.0s	0.1s	Depend on model	√
F8.05	Skip frequency	0.00～F0.04（Max.frequency）	0.01 Hz	0.00Hz	√
F8.06	Skip frequency bandwidth	0.00～F0.04（Max.frequency）	0.01 Hz	0.00Hz	√
F8.07	Traverse amplitude	0.0～100.0%（Relative to the setting frequency）	0.1%	0.0%	√
F8.08	Jitter frequency bandwidth	0.0～50.0% (Relative to the traverse amplitude)	0.1%	0.0%	√
F8.09	Rise time of traverse	0.1～3600.0s	0.1s	5.0s	√
F8.10	Fall time of traverse	0.1～3600.0s	0.1s	5.0s	√
F8.11	Auto reset times	0～9999	0.1s	0	√
F8.12	Fault reset interval	0.1～100.0s	0.1s	1.0s	√

F8.13	FDT Level	0.00～ F0.04 (Max.frequency)	0.01 Hz	50.00 Hz	√
F8.14	FDT lag	0.0～100.0%（FDT）	0.1%	5.0%	√
F8.15	Frequency arrival detecting range	0.0～100.0%（Max.frequency）	0.1%	0.0%	√
F8.16	Brake threshold voltage	380V Series：115.0～140.0%（Stardard DC bus voltage）	0.1%	125.0%	√
		220V Series: 115.0～140.0%（Stardard DC bus voltage）	0.1%	115.0%	√
F8.17	Coefficient of rotation speed	0.1～999.9% Actual mechanical speed=120*output frequency *F8.17/Number of poles of motor .	0.1%	100.0%	√
F8.18	Braking energy output starting value	0～100%	1%	0%	√
F8.19 ～ F8.20	Reserved				-

5.10 F9 Group-PID control

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
F9.00	PID given selection	0：Keypad（F9.01） 1：Annalog chanel AVI given 2：Annalog chanel ACI given 3：Remote communication given 4：Multi-step given 5：keypad direct given	1	0	√
F9.01	Keyboard preset PID	0.0～100.0%	0.1%	0.0%	√
F9.02	PID feedback source selection	0：Analog channel AVI feedback 1：Analog channel ACI feedback 2：AVI+ACI feedback 3：Remote communication feedback	1	0	√
F9.03	PID output characteristics selection	0：PID output is positive 1：PID output is negative	1	0	√
F9.04	Proportional gain K（Kp）	0.00～100.00	0.01	1.00	√

F9.05	Integral time (Ti)	0.01～100.00s	0.1s	0.10s	√
F9.06	Differential time (Td)	0.00～100.00s	0.1s	0.00s	√
F9.07	Sample cycle (T)	0.01～100.00s	0.1s	0.10s	√
F9.08	PID control bias limit	0.0～100.0%	0.1%	0.0%	√
F9.09	Feedback lost detecting value	0.0～100.0%	0.1%	0.0%	√
F9.10	Feedback lost detecting time	0.0～3600.0s	0.1s	1.0s	√
F9.11	Feedback gain	0～200%	0.1%	100%	√
F9.12	Awakening threshold	0.0～100.0%	0.1%	0.0%	√
F9.13	Awakening threshold detection time	0.00～360.00s	0.1s	1.00s	√
F9.14	Sleep threshold	0.0～100.0%	0.1%	100.0%	√
F9.15	Sleep threshold detection time	0.00～360.00s	0.1%	1.00s	√
F9.16 ~ F9.20	Reserved				-

5.11 FA Group Multi- step speed control

Code	Name	Setting Range	Min. Unit	Factory setting	Modification	Running
FA.00	Multi-step speed 1	-100.0～100.0%	0.1%	0.0%	√	
FA.01	Multi-step speed 2	-100.0～100.0%	0.1%	0.0%	√	
FA.02	Multi-step speed 3	-100.0～100.0%	0.1%	0.0%	√	
FA.03	Multi-step speed 4	-100.0～100.0%	0.1%	0.0%	√	
FA.04	Multi-step speed 5	-100.0～100.0%	0.1%	0.0%	√	
FA.05	Multi-step speed 6	-100.0～100.0%	0.1%	0.0%	√	
FA.06	Multi-step speed 7	-100.0～100.0%	0.1%	0.0%	√	
FA.07	Multi-step speed 8	-100.0～100.0%	0.1%	0.0%	√	
FA.08	Multi-step speed 9	-100.0～100.0%	0.1%	0.0%	√	
FA.09	Multi-step speed 10	-100.0～100.0%	0.1%	0.0%	√	
FA.10	Multi-step speed11	-100.0～100.0%	0.1%	0.0%	√	
FA.11	Multi-step speed 12	-100.0～100.0%	0.1%	0.0%	√	
FA.12	Multi-step speed 13	-100.0～100.0%	0.1%	0.0%	√	
FA.13	Multi-step speed 14	-100.0～100.0%	0.1%	0.0%	√	

FA.14	Multi-step speed 15	-100.0～100.0%	0.1%	0.0%	√
FA.15	Multi-step speed direction source selection	0：External Control 1：own control	1	0	√
FA.16 ~ FA.20	Reserved				-

5.12 Fb Protection Function

Code	Name	Setting Range	Min. Unit	Factory setting	Modification Running
Fb.00	Motor overload protection	0：Disable. 1：normal motor（with low speed compensation） 2：variable frequency motor (without low speed compensation)	1	2	×
Fb.01	Motor overload protection current	20.0～120.0% (Motor rated current）	0.1%	100.0%	√
Fb.02	Momentary power drop frequency point	70.0～110.0% (Standard bus voltage)	0.1%	80.0%	√

Fb.03	Momentary power drop frequency rate of decline	0.00～F0.04 （Max.frequency）	0.01Hz	0.00Hz	√
Fb.04	Over-voltage stall protection	0：Disable 1：Enable	1	0	√
Fb.05	Over-voltage stall protection voltage	110～150%（380V Series ）	1%	130%	√
		110～150%（220V Series ）	1%	120%	
Fb.06	Auto current threshold	100～200%	1%	GType：160%	√
				P Type：130%	√
Fb.07	Frequency decrease rate when current limiting	0.00～100.00Hz/s	0.01Hz/s	10.00Hz/s	√
Fb.08	Input phase loss protection selection	0：Invalid 1：software detect is valid 2：hardware detect is valid	1	Depend on model	√
Fb.09 ～ Fb.10	Reserved				-

5.13 Fc Group Communication Parameters

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modification
FC.00	Local address	1～247, 0 broadcast address	1	1	√
FC.01	Aud rate selection	0: 1200bps 3: 9600bps 1: 2400bps 4: 19200bps 2: 4800bps 5: 38400bps	1	4	√
FC.02	Data format	0: No parity（N，8，1）for RTU 1: Even parity（E，8，1）for RTU 2: Odd parity（O，8，1）for RTU 3: No parity（N，8，2）for RTU 4: Even parity（E，8，2）for RTU 5: Odd parity（O，8，2）for RTU 6: No parity（N，7，1）for ASCII 7: Even parity（E，7，1）for ASCII 8: Odd parity（O，7，1）for ASCII 9: No parity（N，7，2）for ASCII 10: Even parity（E，7，2）for ASCII 11: Odd parity（O，7，2）for ASCII 12: No parity（N，8，1）for ASCII 13: Even parity（E，8，1）for ASCII 14: Odd parity（O，8，1）for ASCII 15: No parity（N，8，2）for ASCII 16: Even parity（E，8，2）for ASCII 17: Odd parity（O，8，2）for ASCII	1	1	√

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FC.03	Communication answer delay time	0~200ms	1ms	5ms	√
FC.04	Communication timeout delay	0.0 (invalid) 0.1~200.0s	0.1s	0.0s	√
FC.05	Communication error action	0：Alarm and coast to stop 1：Do not alarm and keep running 2：Do not alarm and stop at the stopping method(only for communication control mode) 3：Do not alarm and stop at the stopping method (for all communication control modes)	1	1	√
FC.06	Response action	0：Response to reading and writing 1：No response to writing	1	0	√
FC.07	Communication parameters address mode	0：Group mode 1：Sequential mode	1	0	√
FC.08	Reserved				-

5.14 Fd Group Supplementary Function

Code	Name	Setting Range	Min. Unit	Factory setting	Running Modfication
Fd.00	Low-frequency threshold of restraining oscillation	0～500	1	5	√
Fd.01	High-frequency threshold of restraining oscillation	0～500	1	5	√
Fd.02	Amplitude of restraining oscillation	0～100	1	10	√
Fd.03	Threshold of restraining oscillation	0.00～F0.04 （Max.frequency ）	0.01 Hz	12.50Hz	√
Fd.04	Restrain oscillation	0：Enable 1：Diable	1	1	√
Fd.05	PWM Selection	0：PWM mode 1 1：PWM mode 2 2：PWM mode 3	1	0	×

Fd.06	Torque setting source	0：Keypad setting torque (corresponding to Fd.07) 1: Analog AVI setting torque (100% compared to 2 times of inverter rated current) 2: Analog ACI setting torque (same as 1) 3: Analog AVI + ACI setting torque（same） 4：multi-stage torque setting（same as 1） 5：Remote communication setting torque. (same as 1)	1	0	√
Fd.07	Keypad torque setting	-200.0～200.0%（the rated current of inverter）	0.1%	50.0%	√
Fd.08	Upper frequency limit source selection	0：Keypad setting upper limit frequency（F0.05） 1：Analog AVI setting upper limit frequency (100% corresponds to the maximum frequency) 2：Analog ACI setting upper limit frequency (same as 1） 3：Multi-step setting of upper limit　frequency(same as 1) 4：Remote communication setting upper limit frequency (same as 1)	1	0	√

Fd.09	Auto current limiting selection	0：Enabled when constant speed 1：Disabled when constant speed	1	0	√
Fd.10	Lower limit frequency operation mode	0：lower limit frequency running 1：zero frequency running	1	0	×
Fd.11	Zero-frequency operation braking current	0.0～150.0%	0.1%	0.0%	√
Fd.12	Torque Static Friction Coefficient	0.00～10.00	0.01	0.20	√
Fd.13 ～ Fd.15	Reserved				-

6.Common Fault and Solutions

Table 6-1 common fault and solutions

Fault code	Fault Type	Reason	Solution
⊡⊏Ħ	Over-current when acceleration	① Accel. time is too short. ② The load inertia is too big. ③ The torque increases too fast or V/F curve is improper. ④ The voltage of the power supply is too low. ⑤ The power of inverter is too low. ⑥ Restart the rotating motor after momentary stop.	① Increase Acc time. ② Reduce the load inertia. ③ Reduce the Torque boost value or adjust V/Fcurve. ④ Check the input power supply. ⑤ Select a bigger capacity inverter. ⑥ Set the start mode F1.00 to rotating tracking start
⊡⊏⫏	Over-current when deceleration	① Dec time is too short. ② The load inertia is too strong. ③ The power of the inverter is too low.	① Increase dec time. ② Decrease the inertia of the load. ③ Select a bigger capacity inverter.
⊡⊏⊓	Over-current when constant speed running	① The input power is abnormal. ② The load is transient. ③ The power of the inverter is too low.	① Check the input power ② Reduce the load mutation. ③ Select a bigger Capacity inverter.

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ouH	Over-voltage when acceleration	① The input voltage changes abnormally. ② Restart the rotating motor after momentary stop	① Check the input power. ②Set the start mode F1.00 to rotating tracking start
oud	Over-voltage when deceleration	① Dec time is too short. ② There have loads of energy feedback ③ The input power is abnormal.	① Increase the dec time. ② Select the proper braking components ③ Check the input power.
oun	Over-voltage when constant speed running	①The input power is abnormal. ② There have loads of energy feedback ③ Voltage detection channel is abnormal	① Check the input power. ② Install or select the proper braking components ③ Ask for sevice.
$ou5$	Over-voltage when stop	① The input power is abnormal.	① Check the input power.

Fault code	Fault Type	Reason	Solution
Lu	Under voltage when running	① The input voltage is too low. ② Sudden power loss. ③ Input power get fault. ④ Poor contact of the DC circuit. ⑤ Contactor with poor connection	① Check the input voltage is low or not. ② Reset the inverter and check the input power. ③ Check the input power of the grid. ④ Check the main circuit or ask for service. ⑤ Check the contactor or ask for service.
LP	Input phase loss	① R,S and T phase loss	① Check the input voltage ② Check installation and wiring
SPO	Output phase loss	① U,V and W phase get loss or serious unbalance for three phase of the load	① Check installation and wiring ② Check the motor and cable
SC	Power module failure	① The three phase of inverter output is short circuit or gound fault . ② The inverter get instantaneous overcurrent	① Check the wiring ② Improve the ventilation condition and reduce the carrier frequency.

		③ The ambient temperature is too high. ④ Air duct jam or fan damage ⑤ The DC assistant power supply is damaged. ⑥ The control board is abnormal.	③ Clear the duct and replace the fan ④ Ask for service ⑤Ask for service
$oH1$	Cooler overheat	① Ambient temperature is too high. ② fan damage ③ Air duct jam	① Low the ambient temperature ② Replace the fan. ③ Clear the duct and improve the ventilation conditions
$oL1$	Motor overload	① The torque increases too fast or V/F curve is improper ② The voltage of the power supply is too low. ③ The motor didn't run or the load get mutation ④ The setting of motor overload coefficient is improper.	① Reduce the torque boost value or adjust V/F curve. ② Check the grid voltage. ③ Check the load and motor; ④ Set the proper value of the motor overload coefficient protection Fb.01.

Fault Code	Fault Type	Reason	Solution
$oL2$	Inverter overload	① The torque increases too fast or V/F curve is abnormal ② Acc Time is too short. ③ The load is too big ④ The voltage of the grid is too low	① Reduce the torque boost value or adjust V/F curve. ② Increase the Acc. Time ③ Select a large power inverter ④ Check the voltage of the grid
EF	External fault	① External device get fault or the input terminal is closed	① Stop the external device and input terminal and clear the fault .
$I tE$	Current detection Error	① The current sensor or the circuit get fault ② The DC assistant power show the fault	①Ask for service ②Ask for service
tE	Motor auto –tuning fault	① The motor capacity doesn't comply with the inverter capacity ② The parameter of the motor does not set correctly ③ There have big deviation between the auto-tuning parameter of and the standard	① Change the inverter mode ② Set the rating parameters according to the nameplate of the motor ③ Make the motor run without load and identify again

		parameter ④ Auto tuning get overtime	④ Check the motor wiring and set the parameters
EEP	EEPROM reading and writing error	① Error of reading and writing of the controlling parameters ② EEPROM get damaged.	① Ask for service ② Ask for service
PI dE	PID feedback disconnection fault	① PID feedback disconnection ② PID feedback source disappear.	① Check the PID feedback signal wires ② Check the PID feedback source
dCE	The main chip fault	① The main chip get damaged	① Seek for service
CE- 1	RS485 communication fault	① The baud rate setting is incorrect ② Serial port communication get failure due to interference ③ No PC communication signals	① Set the proper baud rate ② Check the Communication wires. and increase the interference measures. ③ Check the PC is work or not and the communication cable is disconnected or not .

Fault code	Fault Type	Reason	Solution
$CE-4$	Keypad communication fault	① The wire between the keypad and control board get failure ② The wire between the keypad and control board loose.	① Ask for service ② Check and connect the wire again
$ERR1$	Data upload error	① The wire between the keypad and control board get failure ② The wire between the keypad and control board loose.	① Ask for service ② Check and connect the wire again
$ERR2$	Data download error	① The wire between the keypad and control board get failure ② The wire between the keypad and control board loose.	① Ask for service ② Check and connect the wire again

7. Outline Dimension& Mounting Dimension
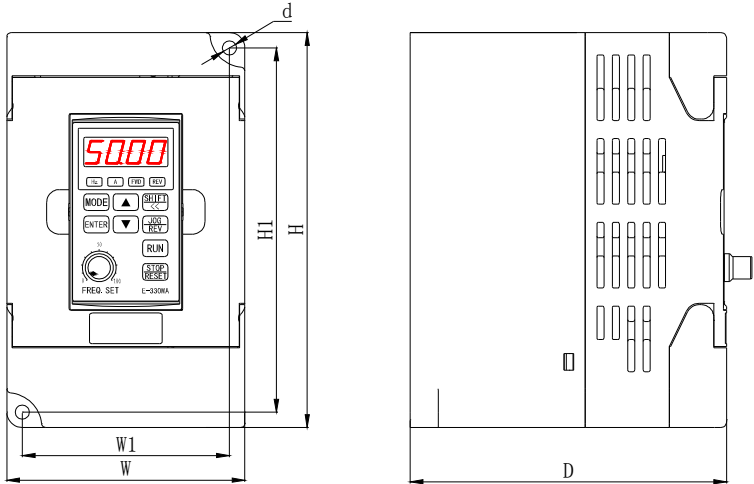
7.1 Inverter outline Dimension& Mounting Dimension

Fig.7-1 Inverter Outline Dimensional Drawrings

Inverter Model	Power (kW)	Size(MM)						Fig.	Weight （kg）
		H	**H1**	**W**	**W1**	**D**	**d**		
ZVF330-M0R4T2/S2	0.4	141.5	130.5	85	74	113	Φ5	Fig.7-1	
ZVF330-M0R7T2/S2	0.75								
ZVF330-M1R5T2/S2	1.5	151	140	100	89.5	116.5	Φ5	Fig.7-1	
ZVF330-M2R2T2/S2	2.2								
ZVF330-M0R7T4	0.75								
ZVF330-M1R5T4	1.5								
ZVF330-M2R2T4	2.2								

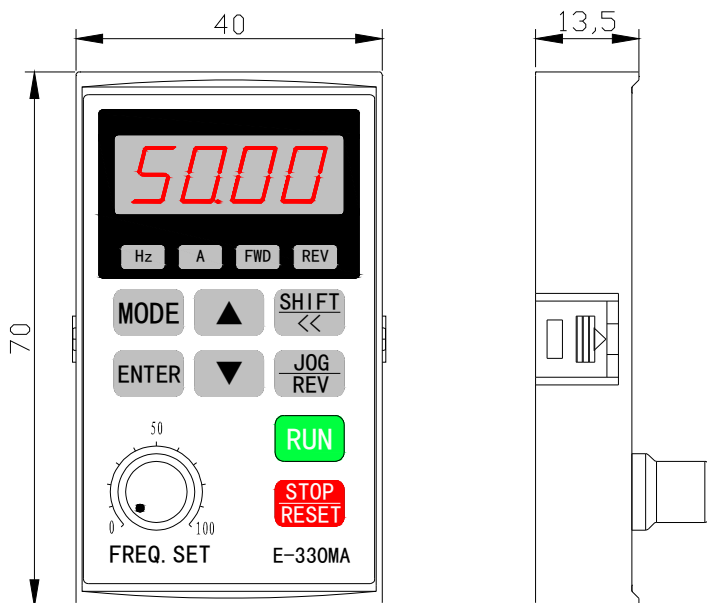## 7.2 Operator Panel Outline Dimension & Mounting Dimension

Fig.7-2   Dimension of E-330 operation panel

- When E-330 need to install outside of the inverter, it need to add another keypad installation mount .
- Mounting hole size: width 45mm × height 75mm.

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8. Quality Warranty

8.1 Inverter Quality warranty

1. In case of a quality failure, the following regulations will be implemented:

● If shipped within one month, the manufacturer shall take responsibility for refund, replacement and repair (except non-standard inverter).

● If shipped within three months, the manufacturer shall take responsibility for replacement and repair.

● If shipped within twelve months, the manufacturer shall take responsibility for repair.

● If exact shipping date can't be fixed, the manufacturer shall provide eighteen-months warranty from the date of manufacture. User shall be required to pay for repair service after expiration of warranty period.

● Paid life-long service is available regardless of where and when to use our inverter.

● The manufacturer shall take responsibility only for the above service. If user need more guarantee, please apply for insurance company.

● In following causes of failure, even within the warranty period, the user is required to pay for repair service:

1) Failure caused by incorrect operation against user manual.
2) Failure caused by using inverter beyond its standard specification requirement.
3) Failure caused by natural disasters such as flood, fire, or abnormal voltage.
4) Failure caused by unauthorized repair and modification.
5) Failure or components ageing caused by improper environment.
6) Payment is not settled as per purchasing agreement.
7) Label, trademark and date of manufacture are not recognizable.
8) Damage caused by improper transport and storage.
9) The details of installation, operation, wiring and maintain can't be described clearly and truthfully.

Refund, replacement and repair service will be provided only when goods is returned to manufacturer and responsibility ownership is confirmed.

Appendix 4: Inverter User's Warranty Bill

User's detail:

Name of Distributor		The date of purchase	
Inverter Model		Serial Number	
Equipment Name		Motor Power	
Date of Installation		Date of Use	

Records of repair

Fault：
Solution：
Date of repair：   The name of reapir worker(Signature)：

Fault：：

Solution：
Date of repair： The name of reapir worker(Signature)：

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The user should keep this warranty bill .