

SUSWE Electric

Inverter User Manual

1-single-in three-out



Simple general series, Miniature AC motor driver

Chapter I Overview

This manual is intended for installation, commissioning, maintenance and use by the user.

1. Unpacking inspection

Remove the Inverter from the box and confirm that : Whether the product appearance is damaged or deformed : Whether the components are damaged or fall off : Observe the rating of the nameplate on the chassis side and check whether it is consistent with your order requirements:

Check whether the items listed in the packing list box are complete. If there is any doubt about the product damage, please contact the supplier immediately.

2. Please read it carefully before use and keep it properly.

3. Use environment.

Power supply : Single input AC220V \pm 40%

Temperature : -10 $^{\circ}$ C - 50 $^{\circ}$ C

Humidity : 0% - 65%

4. Precautions

When wiring, the power supply must be turned off.

Make sure that AC power is never connected to the motor output.

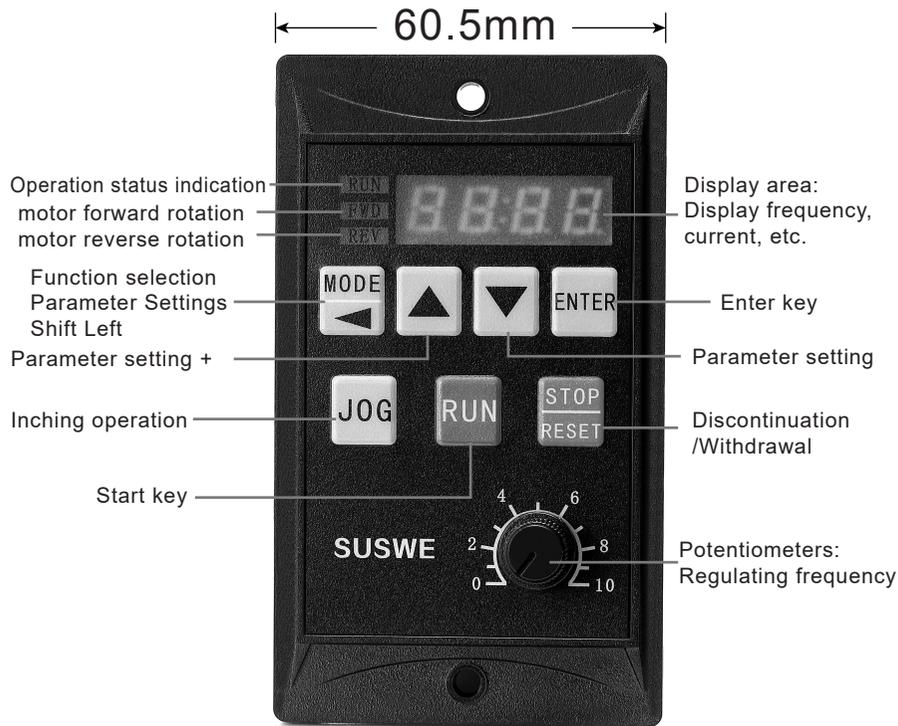
5. There is no condensation, dust and corrosive liquid/gas on the site.

6. The installation position shall be firm and free from vibration.

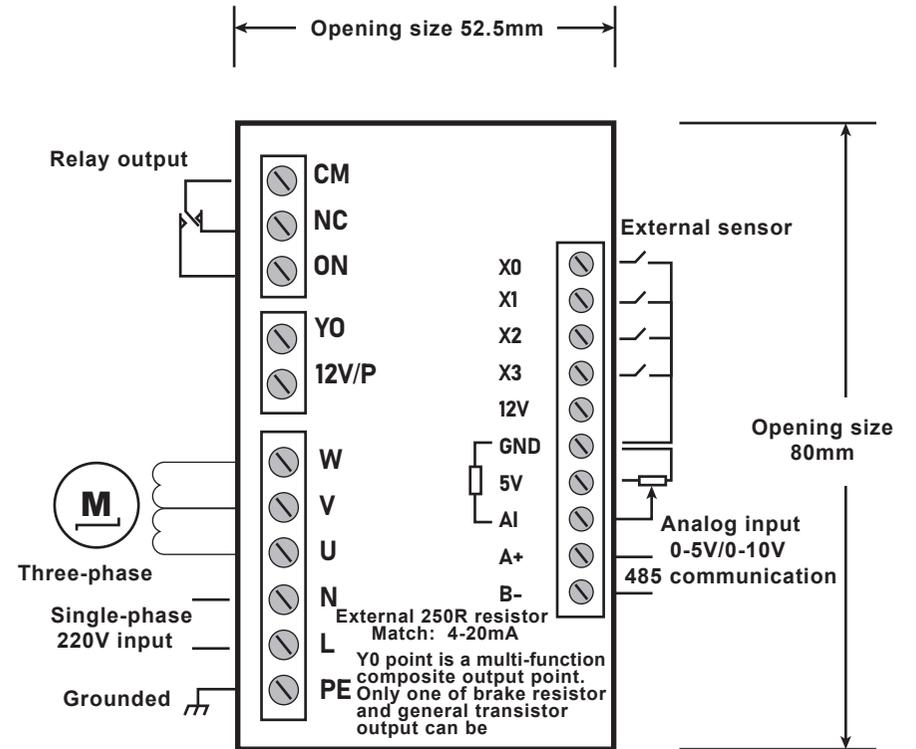
7. As the overall size is small, please handle the wire ends properly.

8. If the ambient temperature is high, please leave enough heat dissipation space.

Chapter II Installation and Wiring



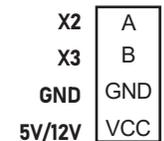
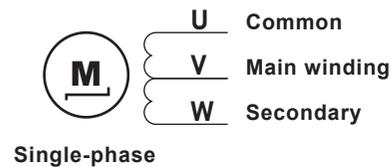
Opening size 52.5MM*80MM*130MM



Single-phase three-wire output

Single-phase two-wire output without dismantle

Encoder Input



Chapter III Key Description:

XXX below represents arbitrary data

(MODE key):

This key can view the set frequency(Fxxx) and operating frequency (Hxxx) of the frequency converter.

Operating current (Axxx), motor direction(FWD/REV), input voltage(Uxxx), inverter temperature (TXXX),

Input point status(Lxxx),PID parameter display (X.X - X X) indicates setpoint / feedback value.

(▲ key):

Add data function when setting data or add frequency when frequency is controlled by panel.

(▼ key):

Subtract data function when setting data or reduce frequency when frequency is controlled by panel.

(ENTER key):

Press this key to enter parameter mode when entering Pxxx parameter setting, and press this key to save the set parameters after modification.

(JOG key):

Jog operation function.

(RUN key):

Inverter panel operation start key.

(STOP / RESET key):

Press this key to stop in operation mode, and press this key to clear fault alarm function in fault display mode.

(ENTER +):

This key is a composite key. In panel lock mode, you can press this key to unlock the function. When the panel lock function is enabled, you can press this key to enter the panel lock function.

Description of panel settings:

When the panel displays Pxxx, you can press the up and down arrow buttons to adjust to the specified parameter number, and then press the ENTER key to enter the data mode of this menu item. This data can be modified to the specified size according to the following table. After modification, press the ENTER key to save. If the panel does not display Pxxx mode, you can press the MODE key until Pxxx is displayed.

Chapter IV Parameter Description

List of functions/parameters

Classification	Number	Functional Description	Setting range	Factory value
P00	Master frequency input source setting	00: The master frequency input is controlled by the Digital Operator	0	0
		01: Keypad potentiometer input, 0Hz output below maximum P35 setpoint		
		02: Keypad potentiometer input, output P45 value below maximum P35 setting		
		03: External analog input, output 0Hz below maximum P35 setpoint		
		04: External analog input, output as P45 value below the maximum P35 set value		
		05: 485 Communication given		
		06: PID control mode (PID input is input by external analog quantity)		
P01	Operation signal source setting	01: Operation command is controlled by external terminal	0	0
		00: the run command is control by that digital operator		
		02: 485 Communication control		
P02	Motor stop mode setting	01: stop by deceleration brake	0	0
		00: Stop in free-running mode		
		02: External braking stop (braking resistance shall be added)		
P03	Motor rating (maximum frequency) selection	1.00~400.00Hz	50	

Classification	Number	Functional Description	Setting range	Factory value
Basic parameter	P04	Maximum output voltage selection	230V:0.1~255.0V	220
			460V:0.1~510.0V	380
	P05	Intermediate frequency selection	0.10~400.0Hz	1.5
	P06	Intermediate voltage selection	230V:0.1~255.0V	20
			460V:0.1~510.0V	40
	P07	Minimum Output Frequency Selection	0.10~20.0Hz	1.5
	P08	Minimum Output Voltage Selection	230V:0.1~255.0V	10
			460V:0.1~510.0V	20
	P09	First acceleration time selection	0.01~600.0s	10
	P10	First deceleration time selection	0.01~600.0s	10
	P11	Second acceleration time selection	0.01~600.0s	10
	P12	Second deceleration time selection	0.01~600.0s	10
	P13	Frequency setting of the first stage	0.00~400.0Hz	0
	P14	Frequency setting of the second stage	0.00~400.0Hz	0
	P15	Frequency setting of the third stage	0.00~400.0Hz	0
	P16	Frequency setting of the fourth stage	0.00~400.0Hz	0
	P17	Frequency setting of the fifth stage	0.00~400.0Hz	0
	P18	Frequency setting in the sixth stage	0.00~400.0Hz	0
	P19	Frequency setting of the seventh stage	0.00~400.0Hz	0
	P20	Prohibition of reverse function setting	00: Reversible 01: Reversal prohibited	0
P21	Carrier frequency setting	01~15; fc=1kHz~15kHz	15	
P22	DC braking current level setting	00~80%	0	

Classification	Number	Functional Description	Setting range	Factory value
	P23	DC setting time setting at startup	0.0~5.0s	0
	P24	DC setting time setting at stop	0.0~25.0s	0
	P25	DC Set Start Frequency at Stop	0.00~15.00Hz	0
	P26	Output frequency upper limit setting	0.10~400.0Hz	400
	P27	Output frequency lower limit setting	0.00~400.0Hz	0
Classification	Number	Functional Description	Setting range	Factory value
	P28	Multi-function input selection 1 (X0)	0: X0: Forward/stop; X1: Reverse/Stop	
		Multi-function input selection 2 (X1)	1: X0: Forward/stop; X1: Reverse/Stop	
			2: X0: Forward/stop; X1: Reverse/Stop X2: Jog forward rotation; X3: Jog reversal	
	P29	Multi-function input selection 2 (X2)	0: No function	4
			1: Stop according to deceleration time	
			2: Free parking	
			3: RESET instruction	
	P30	Multi-function input selection 3 (X3)	4: Multistep Speed Command 1	5
	P31	Multi-function input selection 4 (X4)	5: Multi-step speed instruction 2	6
	P32	Multi-function input selection 5 (X5)	6: Multi-step speed instruction 3	0
	P33	Arbitrary arrival frequency setting	0.00~400.0Hz	0
	P34	Torque compensation gain	00~10	0
	P35	AVI minimum given	0.0V~P36	1

Number	Functional Description	Setting range	Factory value
P36	AVI maximum given	P35~10.0V	50
P37	Automatic reset/startup times setting after abnormality	00~10	00
P38	Automatic reset/startup interval setting after abnormality	0.0~20s	0
P39	Analog output gain setting	00~200%	100
P40	Power Start Operation Lockout	00: Operable 01:Inoperable	1
P41	Multi-function output PDELAY contact	00: In-service indication	3
		01:Set frequency arrival indication	
		02:Arbitrary frequency arrival indication	
		03:Fault indication	
		04: Timing 1 output	
		05: Timing 2 output	
		06: Count 1 output	
		07:Count 2 output	
P42	Parameter Lock/Reset Settings	00:All parameter values are set in read/write mode	0
		01: All parameters are set to read only mode	
P43	Set frequency	0.00~400.00Hz	50
P44	DC braking frequency at startup	0.00~15.00Hz	0.5

Number	Functional Description	Setting range	Factory value	
P45	Analog low-end frequency	0.00~400.00Hz	0	
P46	Fault clearing	0	0	
P47	Fault record 1	*	*	
P48	Fault record 2	*	*	
P49	Fault record 3	*	*	
P50	Fault record 4	*	*	
P51	Latest fault record item	47~50	47	
P52	Rated current of motor	0-65000	15	
P53	Motor no-load current	0-65000	10	
P54	Electric slip compensation coefficient	0-1000	0	
Common parameter	P55	Motor overload protection mode	0:thermal equivalent protection	0
			1: Isochronous protection mode	
	P56	Motor overload protection level	0~300%	150%
	P57	Motor overload protection time	0~600.0S	60.0S
	P58	Overvoltage stall voltage	0~999.9V	370.0V
	P59	Stall prevention current level during acceleration	0~300%	150%
	P60	Stall prevention current level in constant speed	0~300%	150%
	P61	Stall prevention current level during deceleration	0~300%	150%
P62	Stall prevention current level in constant speed	0~600.0S	0.0S	

	Number	Functional Description	Setting range	Factory value
P63		Startup mode selection	0: Accelerated boot from boot frequency	0
			1: Frequency tracking enabled	
P64		Fault restart startup mode selection	0: Fault restart accelerated from start frequency	0
			1: Fault start-up by frequency tracking start-up	
P65		Frequency adjustment step value of plus and minus keys	0~400.0Hz	0.10Hz
P66		DAC Output Select	0: Set Frequency	0
			1: Output frequency	
			2: Output current	
			3: Alma mater voltage	
			4: Inverter temperature	
P67		Restore parameters to factory values	8: Factory reset	0
			Other values: Invalid	
P68		Frequency tracking current level	0~300%	150%
P69		Frequency tracking time	0~900.0S	3.0S
P70		Frequency tracking voltage rise time		
P71		Jog frequency	0~400.0Hz	0Hz
P72		Multi-step acceleration and deceleration time selection	0~255 are set according to binary weighting	0
			Bit1~bit7 correspond to P13~P19 respectively	
			0: Acceleration and deceleration time 1 1: Acceleration and deceleration time 2	
P73		Rated voltage of frequency converter	0~550.0V	2200
P74		Frequency converter rated current	0~6500.0A	20

	Number	Functional Description	Setting range	Factory value	
Plant Parameters	P75	Frequency converter overload protection level	0~300%	150%	
	P76	Inverter overload protection time	0~600.0S	60.0S	
	P77	Overvoltage protection voltage	0~999.9V	400.0V	
	P78	Undervoltage protection voltage	0~999.9V	200.0V	
	P79	Current detection coefficient	0~65535	1000	
	P80	Voltage detection coefficient	0~65535	2750	
	P81	Output AC voltage coefficient	0~65535	1000	
	P82	IO input filter coefficient	0~65535	50	
	P83	Fan starting temperature	0~80	50	
	P84		Motor type	0: Three-phase output	0
				1: Single-phase 2-wire output without removing capacitor (U,V connected to motor, W empty not connected)	
				2: Single-phase 3-wire output capacitor (U is common terminal, V is primary, W is secondary)	
				3: Single-phase 3-wire output 2-split capacitor (U is common terminal, V is primary, W is secondary)	
	P85		Inverter Type	0: Universal frequency converter	00
				1: Special frequency convert for constant pressure water supply	
	P88		Software version number	*	
	P92		Control mode	0: VF Control	0
				1: voltage vector	
			2: Current non-inductive vector		

	Number	Functional Description	Setting range	Factory value
Common Extended Parameters	P93	Vf curve	0: Straight line VF curve	0
			1:1.2 Power VF curve	
	P94	Bus voltage filter coefficient	10~1000MS	0.020s
	P95	Output current sampling filter time	10~10000MS	1.000s
	P96	Maximum number of pulses per second of encoder	0~65535	10000
	P97	Encoder sampling time	1~9999	0.101S
	P98	Panel Display Locked Items	0-7(0 means no locking function, ENTER+DOWN key enables locking function)	0
P99	Overcurrent protection detection sensitivity	0-9(Bit 0 disables overcurrent protection)	2	
Communication and PID control parameters	P100	485 communication address	1-255	8
	P101	(Modbus RTU 8-bit data, no check, 1-bit stop bit)	0=1200,1=2400,2=4800, 3=9600,4=19200,5=3840	3
		Communication format	6=57600,7=115200 Example of selling P00 (station No. 039C40 0001 CRCLCRCH)	
		40000 start address represents P00	Example of writing P00=1 (station No. 109C40 0001 02 0001 CRCL CRCH) The change of baud rate can take effect only after the frequency converter is restarted	
	P102	485 Frequency setpoint	0-400.00	50
	P103	485 Run Settings	Each bit represents a different function	0
Bit; 0= Stop, 1= Run				
Bit1 0= forward, 1= reverse				
Bit2; 0= jog stop, 1= forced jog operation				
		Bit3; 0= slow stop, 1= free stop, 2= brake stop		

	Number	Functional Description	Setting range	Factory value
	P106	PID Configuration	Units: 0= single, 1= bi-directional	000
			Tens: 0= negative effect, 1= positive effect	
			Hundreds: 0=PID failure without alarm 1= deceleration stop, 2 free stop	
P107	PID output limit	0-100	100%	
	P108	PID given signal selection	0:Keyboard key assignment	2
			1:Keyboard potentiomete given	
			2: AL1 external analog quantity given	
			3: AL2 external analog quantity given	
	P109	PID feedback signal selection	0:Keyboard key assignment	2
			1:Keyboard potentiomete given	
			2: AL1 external analog quantity given	
			3:AL2 external analog quantity given	
P110	PID integration time	0.001-9.999	0.250S	
P111	PID derivative time	0.000-9.999	0.0S	
P112	PID proportional gain	0.000-9.999	100.0%	
P113	PID sampling period	0.001-9.999	0.010S	
P114	PID Deviation Limit	0.0-20.0	5.0%	
P115	PID fault detection time	0.0-9.9	5.0S	
P116	PID Fault Measurements	0.0-100.0	10.0%	
P117	PID Display Range	0.00-1.99	1.00	
P118	PID keyboard setpoint	0.0-9.9	0.25	

	Number	Functional Description	Setting range	Factory value
Constant pressure water supply parameter	P122	Starting pressure deviation	0.0-9.9	10
	P123	Start extended time	0.0-32.000	5.0S
	P124	Shutdown frequency	0.0-400.0	5.00Hz
	P125	Extended downtime	0.0-32.000	30.0S
	P128	Time interval	0-65535(Set 0 for untimed function)	0Min
	P129	Electromagnetic switch action delay	0.0-9.999	0.500S
	P130	Pump switching judgment time	0-9999	5S
	P136	Sleep detection time	0-65535	60.00S
I/O function extension	P139	Y0 Multi-function output setting	00 : In-service indication	08
			01:Set frequency arrival indication	
			02:Arbitrary frequency arrival indication	
			03:Fault indication	
			04: Timing1 output	
			05: Timing 2 output	
			06:Count 1 output	
			07:Count 2 output	
			08:Brake output	
	P140	Timer 1 setting	0-9999	1.000S
	P141	Timer 2 setting	0-9999	1.000S
	P142	Counter 1 set value	0-9999	100
	P143	Counter 2 set value	0-9999	100

Chapter V Fault Code

	Alarm Type	Fault Description	Fault Comment
	OC	Instantaneous overcurrent	Fault Comment
	OCA	Acceleration overcurrent	Check whether the motor is normal
	OCD	Deceleration overcurrent	Adjust the acceleration time appropriately
	OCN	Constant speed overcurrent	Adjust the deceleration time appropriately
	OU	Overpressure	Check whether the machine is normal and the voltage is stable
	LU	Undervoltage	Adjust the acceleration and deceleration time properly, and check whether the mains supply is normal
	OH	Inverter overheating	Detect whether the mains supply is normal (180V-240V)
	EF	External fault	Check whether the heat dissipation of the frequency converter is normal
	ERS	Failure restart failed	Detect external sensors. Whether the input is normal
	LP	Input phase failure	Restart the drive
	OL1	Motor overload	Check whether the mains supply is normal
	OL2	Inverter overload	Check whether the motor is normal and whether the load is too heavy
	OL3	Temporary motor overload	Check whether the motor is normal and whether it matches the frequency converter power
	OL4	Temporary overload of frequency converter	Check whether the load matches the motor
	485	Communication failure	Check whether the motor matches the power of the frequency converter
	PID	PID failure	Check whether the communication line is normal, and whether the upper computer communication is normal
	NO	No fault alarm	Check whether analog input is output and whether sensor is normal



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