# Inverter

# 使用说明书 Operating Instructions

AT1--Single-phase to three-phase

AT2--Single-phase to single-phase

AT3--Three-phase to three-phase

AT4—Single-phase to three-phase

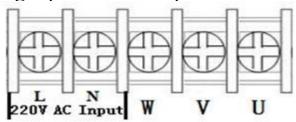
# AT Simple general series

High performance and low noise/
Mini AC motor driver

## **Charter 1 Installation and wiring**

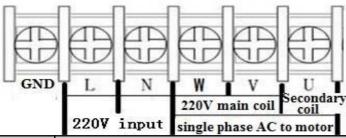
1. Main circuit terminal and function description

(1) Single-phase to three-phase (for **AT1**, **AT4**)



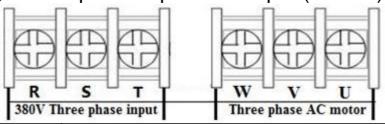
Terminal label	Function description
L, N	Single phase AC 220V input terminal
U, V, W	Output terminal connect to Three phase (220V-AT1) (380V-AT4)AC motor
GND	Grounding terminal

(2) Single-phase input and output (for **AT2**)



Terminal label	Function description
L, N	Single phase AC 220V input terminal
U, V, W	Output terminal connect to Single phase 220V AC motor
GND	Grounding terminal

#### (3). Three-phase input and output (for AT3)



Terminal label	Function description
R,S,T	Three phase AC 380V input terminal
U, V, W	Output terminal connect to Three phase 380V AC motor
GND	Grounding terminal

#### 2. Terminal description

Port	Functional description	Instructions
15V/24V	15V/24V power output	200mA15V/24V output
X6	Input port6 (Reversing switch)	Short Port X6 and COM, input signal effective
X5	Input port 5 (Reverse rotation Control switch)	Short Port X5 and COM, input signal effective
X4	Input port 4(Forward rotation Control switch)	Short Port X4 and COM, input signal effective
Х3	Input port 3(section- speed 3)	Short Port X3 and COM, input signal effective
X2	Input port 2(section- speed 2)	Short Port X2 and COM, input signal effective
X1	Input port 1(section- speed 1)	Short Port X1 and COM, input signal effective
485+/485-	485 communication port	

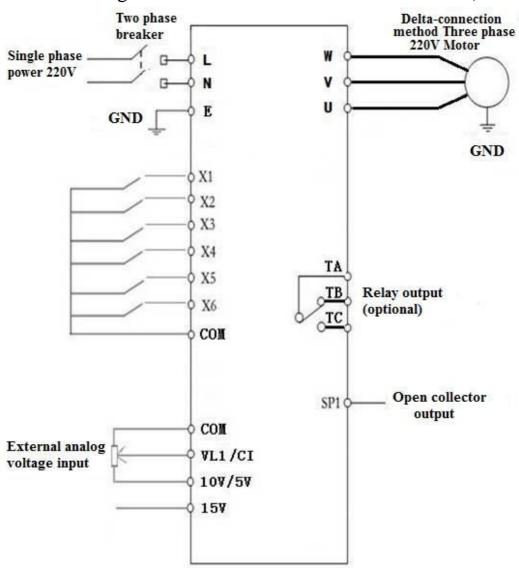
Port	Functional description	Instructions
COM	Common GND	
VL1	External analog voltage input	0-5V/10V Analog voltage input
CI	External current signal input	4-20mA Current input
SP1	Open-collector output 1	
SP2	Open-collector output 2	
5V/10V	5V/10V power output	supply 5V/10V 20mA power output
TC	Relay output C	250VAC 5A/30VDC 3A
ТВ	Relay output B	TA and TB Normal Close ,TA and TC
TA	Relay output A	Normal Open

# 3. Multi-speed input Frequency control table:

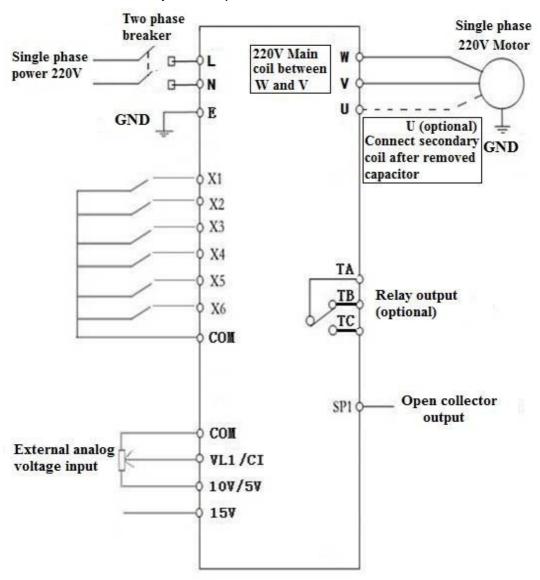
	Section speed input 1	Section speed input 2	Section speed input 3	Original Frequency
Main Speed	1	1	1	50
Section speed 1	1	1	0	45
Section speed 2	1	0	1	40
Section speed 3	1	0	0	35
Section speed 4	0	1	1	30
Section speed 5	0	1	0	25
Section speed 6	0	0	1	20
Section speed 7	1	1	1	15
Note:	ote:  0 means input Port connect with COM, 1 means disconnect.			1 means

#### 4. Basic operation wiring diagram

(1) Single-phase input three-phase output (for AT1) (Three phase 220V, if 380V Star-connection method needs to change to the 220V Delta-connection method)

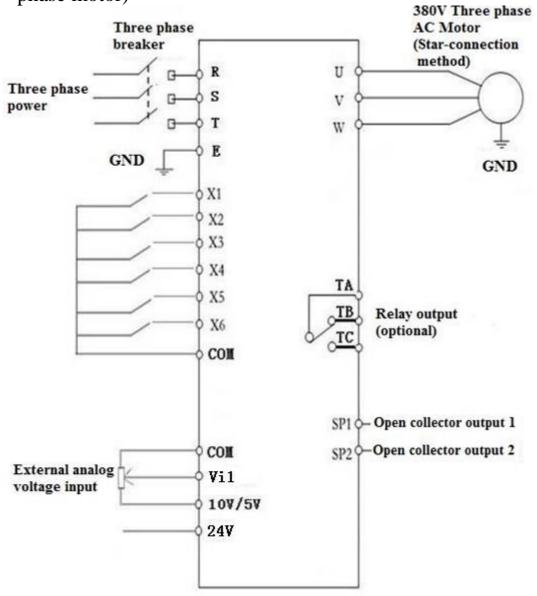


# (2). Single-phase input and output (for AT2) (220V single phase motor, Non-removed capacitor / Removed capacitor)

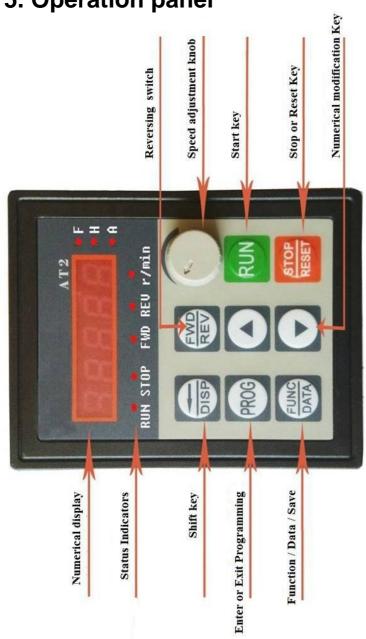


#### (3). Three-phase input and output (for AT3)

(380V three phase input, connect with 380V three phase motor)



# 5. Operation panel



Note: "r/min": Revolution per minute

Frequency setting

"E."

"H": Operating frequency

"A": Operating current

# 6. Keys instructions:

	Icon	Fun	ction description		
1	(Programming)	For selecting mode or Programming mode (it is available not mater the Inverter start or stop), press this key for modifying parameters.			
2	(Function / Save)	Function data setting key. Normal mode: press his key to display the information of the Inverter, such as target frequency, output frequency and current, temperature;			
3	Key (▲)	Parameter number or parameter value increase	Short press this key, then the numerical value will change gradually. Long		
4	Key (▼)	Parameter number or parameter value decrease	press this key, then the numerical value will change rapidly		
5	Shift	Shift in programmir	ng mode, jog in normal mode		
6	Forward / Reverse	Forward / R	everse switching key		
7	Start	Start Inverter output			
8	Stop / Reset	Break down, fault resetting			
Note	Please modify the parameters under the stop state, otherwise the changed parameters cannot be saved.				

# **Chapter 2 Parameter specification**

## 1. Parameter specification

Paramet er	Parameter specification	Parameter range	Default	Unit
P00	Maximum voltage	0220.0/380.0	220/380	V
P01	Reference frequency	0400.0	50	Hz
P02	Intermediate voltage	0220.0/380.0	110/190	V
P03	Intermediate frequency	0400.0	25	Hz
P04	Minimum voltage	0220.0/380.0	0	V
P05	Minimum frequency	0400.0	0	Hz
P06	Maximum operating	0400.0	65.0	Hz
P07	Minimum operating	0400.0	0	Hz
P08	Hide password	065535	00000	
P09	Input password	065535	0	
P10	Working frequency source	0: Panel keyboard; 1: Panel potentiometer; 2: External analog signal 3: RS485.	1	
P11	Start/stop control source	0: Panel keyboard; 1: RS485; 2: External port.	0	

P12	Stopping Modes	<ul><li>0: Inertial stop;</li><li>1: Deceleration stop;</li></ul>	1	
		<ul><li>2: Brake stop;</li><li>3: Emergency brake.</li></ul>		
P13	Braking time	02.5	0.5	S
P14	Braked Voltage	0140.0	20	V
P17	Machine number	1-255	1	
P18	Operating arrival	0100.0	50	Hz
P20	Over temperature protection selection	180	80	
P21	Revolution for 50Hz	0-8000	2800	
P22	Carrier setting	110 (1-20 for High Ver)	10	
P23	Frequency adjusting step size	1100	5	0.1Hz
P24	Overload protection buffer time	0.160.0	3	S
P26	Working frequency	0400.0	50	Hz
P27	Section speed 1 setting	0400.0	45	Hz
P28	Section speed 2 setting	0400.0	40	Hz
P29	Section speed 3 setting	0400.0	35	Hz
P30	Section speed 4 setting	0400.0	30	Hz
P31	Section speed 5 setting	0400.0	25	Hz
P32	Section speed 6 setting	0400.0	20	Hz

P33	Section speed 7 setting	0400.0	15	Hz
P34	Main rising velocity	11000	25	Hz/S
P35	1st rising velocity	11000	25	Hz/S
P36	2nd rising velocity	11000	25	Hz/S
P37	3rd rising velocity	11000	25	Hz/S
P38	4th rising velocity	11000	25	Hz/S
P39	5th rising velocity	11000	25	Hz/S
P40	6th rising velocity	11000	25	Hz/S
P41	7th rising velocity	11000	25	Hz/S
P42	Main descent velocity	11000	25	Hz/S
P43	1st descent velocity	11000	25	Hz/S
P44	2nd descent velocity	11000	25	Hz/S
P45	3rd descent velocity	11000	25	Hz/S
P46	4th descent velocity	11000	25	Hz/S
P47	5th descent velocity	11000	25	Hz/S
P48	6th descent velocity	11000	25	Hz/S
P49	7th descent velocity	11000	25	Hz/S
P50	Multi function input 1 (X1 binding post)	0: invalid, terminal is non-functioning 1: wire control stop 2: keying stop; 3: keying operation; 4: stop keying;		

P50	Multi function input 1 (X1 binding post)	5: wire forward operation 6: wire reverse operation; 7: reservation 8: error reset signal; 9: wire reversing switch; 10: keying forward switching; 11: keying forward switching; 12: reverse switch keying; 13: section speed input 1; 14: section speed input 2; 15: section speed input 3;	13	
P51	Multi function input 2	16: external error signal.	14	
P52	Multi function input 3	17: Jog Forward; 18: Jog Reverse;	15	
P53	Multi function input 4		5	
P54	Multi function input 5	<ul><li>19: Emergency stop;</li><li>20: Relay Control.</li></ul>	6	
P55	Multi function input 6	20. Relay Control.	9	
P58	Multi function input 1 (SP1)	<ul> <li>0: invalid, no output;</li> <li>1: operating instructions;</li> <li>2: set arrival instructions</li> <li>3: fault indication;</li> <li>5: Emergency stop;</li> <li>6: For P50P55=20;</li> </ul>	0	
P60	Multi function input 2	Idem (Relay output)	0	
P62	Display options	0: setting frequency; 1: operating frequency; 2: revolution 3: current; 4: temperature; 5: time;	0	

		0: normal power on;		
		1: report error with start signal when power on;	0	
P65	Power on options	2: Power on forward;	0	
		3: Power on reverse.		
P66	Input stabilization time	065535	60	mS
P67	Voltage coefficient	065535	28500	
P68	Under voltage setting	0220/380	60/180	V
P69	Overvoltage setting	220.0400/680	400/600	V
P70	Torque compensation options	<ul><li>0: P72 is compensation amount;</li><li>1: Multiply P72 by P71 after P71 minus input voltage</li></ul>	0	
P71	Torque compensation voltage	0300.0	10	V
P72	Torque compensation setting	0100	0	
P73	Maximum external analog	065535	31440	
P74	Minimum external analog	065535	2096	
P75	Zero current compensation value	065535	1130	
P76	Current coefficient	065535	9500	
P77	Parameter reset	065535 (It is the reset when 54321)	0	
P78	Main current overload	0-65535	3000	mA
P79	First current overload	0-65535	3000	mA
P80	Second current overload	0-65535	3000	mA
P81	Third current overload	0-65535	3000	mA
P82	Fourth current overload	0-65535	3000	mA
P83	Fifth current overload	0-65535	3000	mA

P84	Sixth current overload	0-65535	3000	mA
P85	Seventh current overload	0-65535	3000	mA
P86	Jog forward frequency	0400.0	20	Hz
P87	Jog reverse frequency	0400.0	20	Hz
P88	Jog rising velocity	11000	50	Hz/S
P89	Jog descent velocity	11000	50	Hz/S
P90	Jog stopping modes	<ol> <li>Inertia stop;</li> <li>Decelerate stop;</li> <li>Braking stop;</li> <li>Emergency brake.</li> </ol>	1	
P91	Jog braking time	02.5	0.1	S
P92	Phase options (AT2 only)	<ul><li>0: Three-phase</li><li>2: Three-line single phase</li></ul>	0	
P98	The frequency of closing the U-phase (AT2)	0-50Hz	0	Hz
P127	Remaining hours	065535	65535	Н

#### 2. Parameter setting password and Down time stop:

P08 is the hidden password, it always shows only 00000, not the actual value.

When input the value of P09=the hidden value of P08, the P08 shows hidden value, and the P08 and other parameters can be changed. The P09 will be nullified when unplug the power cable to restart.

When P127=65535, the function of countdown do not start. When P127 < 65535, the function of countdown will start, the P127 will minus 1 when the Inverter runs for one hour. The frequency converter will be stopped when the countdown of P127 to 0 hour.

#### 4. Parameter setting procedure:

- 1. Press the programming key to enter into the programming state;
- 2. Use the arrow keys and shift key to find the parameters that need to be modified;
- 3. Press function / save key to enter into the parameter;
- 4. Use the arrow keys and shift key to amend the parameter value;
- 5. Press the function / save key to store the parameter;
- 6. Press the programming key to exit the programming state.

### Chapter 4 Fault Code

Fault Code Display	Fault Code Description		
Err 1	Short Circuit/Current overload/Power  Module protection		
Err 2	Undervoltage protection		
Err 3	Overvoltage protection		
Err 4	Driving Circuit Failures		
Err 5	Input at startup when electrified		
Err 6	Over current protection		
Err 7	Overtime		
Err 8	Excessive temperatures for radiator		
Err 9	External fault		