

## GD20 drive single-phase motor non-standard special function description software version number: P7.13 = 2.01.22

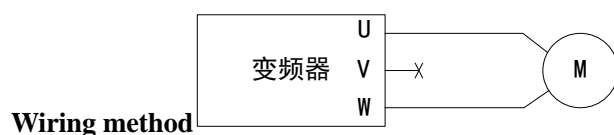
Instructions for use of single-phase motor drive This instruction adds a single-phase motor drive instruction on the basis of the original GD20 instruction manual. All functions of the original GD20 manual are retained, and only the driving algorithm of single-phase motor and related function codes are added to the program.

For single-phase motor drive, the following function codes need to be set as follows (see the red mark in the table below). If you choose to drive a three-phase motor, please set it according to the default value of the GD20 standard manual, and set P04.34=0x00 at the same time.

function code	Name	Detailed description of parameters	Predetermined area	set value	Change
P00.00	speed control mode	0: No PG vector control mode 0 1: No PG vector control mode 1 2: V/F control	0~2	2	◎
P11.00	Phase loss protection	0x000~0x111 LED units: 0: Input phase loss software protection prohibited 1: Input phase loss software protection allowed LED ten digit: 0: Output phase loss software protection is prohibited 1: Output phase loss software protection is allowed LED hundreds: 0: Input phase loss hardware protection prohibited 1: Input phase loss hardware protection allowed	0x000~0x111	0x000	○

For single-phase motor drive, there are two options as follows, which will be introduced separately below.

**Option 1: The inverter outputs single-phase alternating current 1.**



## 2. Function code setting

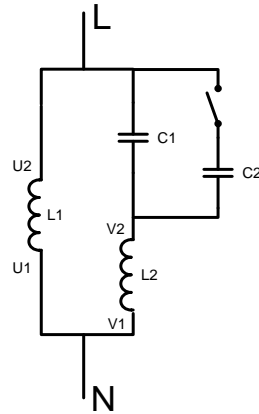
function code	Name	Detailed description of parameters	Predetermined area	set value	Change
P02.04	Asynchronous motor 1 rated voltage	0~1200V	0~1200	220V	⊙
P04.34	Motor drive mode selection	<p>Ones place: motor control mode selection</p> <p>0: Three-phase motor control</p> <p>1: Two-phase control of single-phase motor</p> <p>2: Single-phase motor single-phase control</p> <p>Ten's place: The voltage of the two-phase drive secondary winding (V phase) of the single-phase motor is reversed</p> <p>0: not inverted</p> <p>1: Invert</p>	0x00~0x12	0x02	⊙

In this method, the starting current of the motor is large, and there may be a situation that the motor cannot be started. If the motor cannot be started, the VF curve of group P04 can be adjusted appropriately. If it still cannot be started after adjustment, please choose option 2.

- Option 2: The inverter outputs two-phase alternating current with a difference of 90 degrees (remove the starting and running capacitors of the motor)

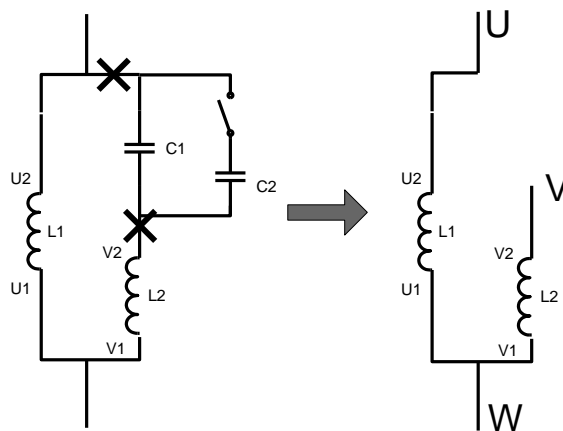
### Wiring method

Using inverter to drive single-phase motor needs to remove the starting capacitor and running capacitor (if there is running capacitor) of the motor. The internal wiring diagram of ordinary single-phase motor is as follows, L1 is the running winding, L2 is the starting winding, C1 is the running capacitor, C2 In order to start the capacitor, when the speed of the motor exceeds 75% of the rated speed, the start capacitor is disconnected by the centrifugal



switch.

After removing the starting capacitor and the running capacitor, the internal wiring diagram of the



single-phase motor winding is as follows:

U1 and V1 are the common terminals of the windings, which are connected to the W-phase output of the inverter, the U2 terminal of the running winding is connected to the U-phase output of the inverter, and the V2 terminal of the starting winding is connected to the V-phase output of the inverter.

## 2. Change the running direction

The motor outlet V1 and V2 can be exchanged, or the phase of the V-phase voltage can be changed through the ten digit of the function code P04.34 to change the running direction of the motor.

After adjusting the forward direction, it is the same as the three-phase motor forward and reverse control, and the running direction is changed through P00.13.

## 3. Function code setting value

function code	Name	Detailed description of parameters	Predetermined area	set value	Change

P04.34	Motor drive mode selection	<p>Ones place: motor control mode selection</p> <p>0: Three-phase motor control</p> <p>1: Two-phase control of single-phase motor</p> <p>2: Single-phase motor single-phase control</p> <p>Ten's place: The voltage of the two-phase drive secondary winding (V phase) of the single-phase motor is reversed</p> <p>0: not inverted</p> <p>1: Invert</p>	0x00~0x12	0x01	⊙
P04.35	The voltage ratio of the secondary winding (V phase) and the main winding (U phase) of the two-phase drive of a single-phase motor	0.00~2.00	0.00~2.00	1.00	○
P17.38	Two-phase drive main winding current of single-phase motor	0.0~100.0A	0.0~100.0A	0.0A	●
P17.39	Two-phase drive secondary winding current of single-phase motor	0.0~100.0A	0.0~100.0A	0.0A	●
P02.04	Asynchronous motor 1 rated voltage	0~1200V	0~1200	200V	⊙

#### 4. Debugging steps

- 1) Set P00.18=1, restore the factory value; set P11.00=0x000, cancel the input and output phase loss detection;
- 2) Control mode P00.00=2 (V/F control), set the single-phase drive mode enable P04.34 bits to 0x01;
- 3) Set the motor nameplate parameters, which are P02.01 motor rated power value, P02.02 motor rated frequency value, P02.03 motor rated speed value, P02.04 motor rated voltage value, P02.05

motor rated current value. The maximum voltage setting should generally be less than the bus voltage/1.6, it is recommended to set the rated voltage less than 200V, P02.04=200V, and the maximum voltage output can also be limited by the multi-point V/F curve;

4) Observe whether the currents of the primary and secondary windings of P17.38 and P17.39 are normal. In addition, switch the displayed current by the shift key to the combined current of the two windings. Note that the impedances of the primary and secondary windings are different. The current of the secondary winding is different;

5) The output current of the primary and secondary windings can be changed by adjusting the voltage output P4.35 of the secondary winding, but the adjustment of the voltage is related to the design parameters of the motor, and it is recommended to be adjusted by professionals, otherwise it will affect the output of the motor.