

GD20 drive single-phase motor non-standard special function description

Version: P7.13 = 2.02.03

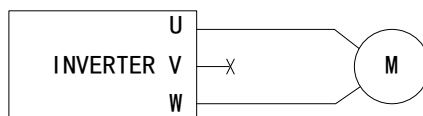
Based on the original GD20 manual, a single-phase motor drive control logic is added. All functions of the original GD20 manual are retained. Only the single-phase motor drive algorithm and related function codes are added to the program.

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 in the GD20 standard manual, and set P04.35=0x00.。

Function code	Function name	Detailed description of parameters	Setting range	Default	Modify
P00.00	Speed control mode	0: SVC0 1: SVC1 2: SVPWM control	0~2	2	⊙
P11.00	Phase loss protection	0x000~0x111 Ones: 0: Input phase loss software protection disable 1: Input phase loss software protection enable Tens: 0: Output phase loss software protection disable 1 Output phase loss software protection enable Hundreds: 0: Input phase loss hardware protection disable 1: Input phase loss hardware protection enable	0x000~0x111	0x000	○

Solution 1: Inverter's output is single-phase AC

1, Wiring



2, Function parameters setting

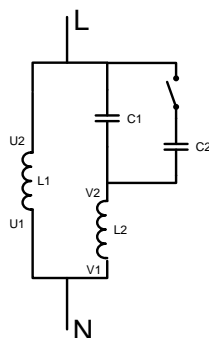
Function code	Function name	Detailed illustration of parameters	Setting range	Default	
P02.04	Rated voltage of induction motor	0~1200V	0~1200	220V	⊙
P04.35	Single-phase drive mode	Ones: Motor control mode selection 0: Three-phase motor control; 1: Single-phase motor two-phase control 2: Single-phase motor single-phase control Tens: Voltage of the secondary winding (V phase) reverse while single-phase motor two-phase control 0: Not reversed; 1: Reversed	0x00~0x12	0x02	⊙

This method of motor start-up current is too large, motors maybe can not start, if the motor does not start, you can properly adjust the P04 group VF curve. If still unable to start after adjustment, please select solution two.

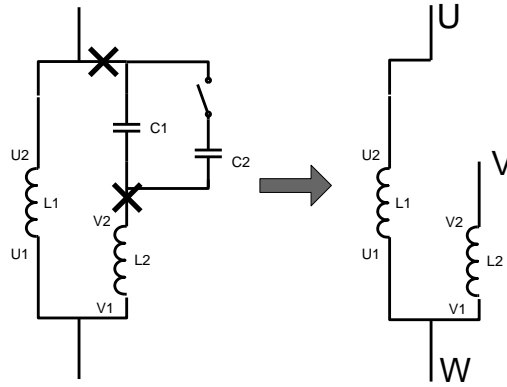
Solution 2: Inverter's output phase difference 90 degrees alternating current (remove start and run capacitor of motor)

1, Wiring

If the single-phase pump cannot be started, the two-phase control method must be used, and the start-up and running capacitors (if any) of the motor must be removed. The figure below shows the internal wiring of the common single-phase motor. In the figure, L1, L2, C1, and C2 indicate the running winding, start-up winding, running capacitor, and start-up capacitor. When the motor speed exceeds 75% of the rated speed, the start-up capacitor is switched off.



After removing the capacitors as the following photo, as below picture showing:



U1 and V1 are the common terminals of the windings. Connect them to the output terminal W of the solar pumping inverter. Connect U2 to the output terminal U of the inverter. Connect V2 to the output terminal V of the inverter.

2, Change direction of operation

You can change the motor's outlet V1 and V2, or change the V phase voltage phase through the ten bits of the function code P04.35 to change the direction of the motor.

After adjusting the positive direction, the three-phase motor is reversed and controlled, and the direction of operation is changed by P00.13.

3,Function parameters setting

P04.35	Single-phase drive mode	Ones: Motor control mode selection 0: Three-phase motor control; 1: Single-phase motor two-phase control 2: Single-phase motor single-phase control Tens: Voltage of the secondary winding (V phase) reverse while single-phase motor two-phase control 0: Not reversed; 1: Reversed	0x00~0x12	0x02	⊙
P04.36	Voltage ratio of V and U while single-phase motor two-phase	0.00~2.00	0.00~2.00	1.00	○
P17.38	Main winding current of single-phase motor two-phase	0.0~100.0A	0.0~100.0A	0.0	●
P17.39	Secondary winding current of single-phase motor two-phase	0.0~100.0A	0.0~100.0A	0.0	●
P02.04	Rated voltage of asynchronous motor	0~1200V	0~1200	200V	⊙

Debugging steps:

- 1, Set P00.18=1, reset factory parameters. Set P11.00=0x000, cancel input and output phase detection function.

- 2, Set P00.00=2(V/F control), set P04.35=0x01.

- 3, Set the suitable motor's parameters. P02.01~P02.05. The maximum voltage setting should generally be less than the bus voltage/1.6, the better set P02.04 less than 200V, such as P02.04=200V. Or the maximum voltage output can also be defined by a multipoint V/F curve.

- 4, See the value of P17.38 and P17.39 is normal or not. In addition, through the shift key switching, the current displayed for the two winding current synthesis current, note the main and secondary winding impedance is different, the same voltage output, the main and secondary winding current is not the same;

- 5, The output current of the main and auxiliary windings can be changed by adjusting the voltage output P04.42 of the auxiliary winding. However, the adjustment of the voltage is related to the design parameters of the motor. It is recommended to adjust patiently, otherwise it will affect the motor output.