



ATO-2HP-NE-VFD Single Phase Input and Output Instruction Manual

[Home](#) » [ATO](#) » ATO-2HP-NE-VFD Single Phase Input and Output Instruction Manual 

Contents

- [1 ATO-2HP-NE-VFD Single Phase Input and Output](#)
- [2 Product Information](#)
- [3 Specifications](#)
- [4 Product Usage Instructions](#)
- [5 Application](#)
- [6 Operating instructions](#)
 - [6.1 Three-wire system control mode](#)
- [7 FAQ's](#)
- [8 Documents / Resources](#)
 - [8.1 References](#)
- [9 Related Posts](#)



ATO-2HP-NE-VFD Single Phase Input and Output



Product Information

Specifications

- **Control Mode:** V/F Control Mode or Senseless Vector Control
- **Frequency Selection:** Analog Potentiometer, Key on Control Panel, Digital Setting 1, Digital Setting 2, Digital Setting 3, VI Analog, CI Analog, Pulse Terminal, Combination
- **Running Frequency Set:** User-defined
- **Running Command Mode Selection:** Control Panel Mode, Terminal Control Mode, Serial Port Control Mode
- **Running Direction Setting:** User-defined
- **Max Output Frequency:** User-defined
- **Basic Running Frequency:** User-defined
- **Max Output Voltage:** User-defined
- **Motor Rated Voltage:** User-defined
- **Motor Rated Current:** User-defined
- **Motor Rated Frequency:** User-defined
- **Motor Rated Rotating Speed:** User-defined
- **Motor Poles Number:** 2, 4, 6

Product Usage Instructions

Wiring the VFD and single-phase motor

To wire a VFD and single-phase motor, follow these steps:

1. If keeping the capacitor, connect the motor to the UW or VW terminals of the VFD. Reverse the motor according to the motor nameplate.
2. If removing the capacitor, please refer to the motor nameplate instructions for wiring.

Start and Stop of Panel Control and Panel Potentiometer Setting Frequency

To start and stop the motor using panel control and set the frequency using the panel potentiometer, follow these

steps:

1. Set the motor's rated nameplate data for parameters P0.07 and P0.08.
2. Set parameter P0.01 as 0 to select the panel potentiometer setting frequency.
3. Set parameter P0.03 as 0 to select panel start and stop control.

Quick setup

Note: For detailed parameter explanation, please refer to the full manual. Group P0

P0.00=0 (V/F control mode, PA group does not need to be set), =1 (Senseless vector control, you need to set the motor parameter group PA)

P0.01=__ channel selection of frequency given.

- Analog potentiometer on control panel(single display valid)
- ▲ ▼ key on control panel (single display valid) Panel digital potentiometer + ▲ ▼ key on control panel(double display valid)
- Digital setting 1, control panel given
- Digital setting 2, UP/DOWN terminal given
- Digital setting 3, serial port given
- VI analog given (VI-GND)
- CI analog given (CI-GND)
- Pulse terminal given (PULSE)
- Combination given (refer to P3.00)

P0.02=Running frequency set P0.20 lower limit freq.~P0.19upper limit freq.

P0.03=Running command mode selection

- Control panel mode
- Terminal control mode
- Serial port control mode
- P0.04=00 Running direction setting
- P0.06=__ Max output freq.
- P0.07=__ Basic running freq.
- P0.08= __ Max output voltage, rated voltage.
- P0.19=__ Upper limit freq. , Lower limit freq. Max output freq.
- P0.06 P0.20=__ Lower limit freq.

Group P9 P9.13

This parameter does not need to be set when the VFD is a single channel display. When the VFD is dual channel display.

- P9.13=0000 Ordinary three-phase asynchronous motor
- P9.13=1000 Single-phase asynchronous motor (removing capacitor)

- P9.13=2000 Single-phase asynchronous motor (without removing the capacitor)

Group PA (When P0.00=1)

- PA.01=__ Motor rated voltage
- PA.02=__ Motor rated current
- PA.03=__ Motor rated frequency
- PA.04=__ Motor rated rotating speed
- PA.05=__ Motor poles number 2, 4, 6

Motor pole and speed comparison

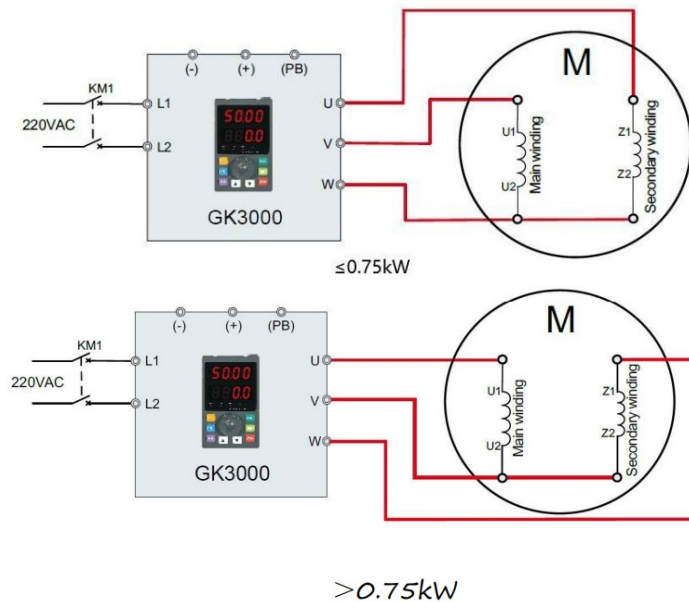
- 2P=3000rpm around, 4P=1450rpm around 6P =960rpm around, /50Hz
- 2P=3600rpm around, 4P =1750rpm around, 6P =1200rpm around, /60Hz

Press ">>" to view the running status.

- b-00 is output frequency.
- b-01 is set frequency.
- b-02 is output voltage.
- b-03 is output current.
- b-04 is bus bar voltage.
- b-05 is module temperature.
- b-06 is motor speed.
- b-08 is Input/output terminal state.
- b-07 is running time.
- b-09 is analog input VI.
- b-10 is analog input CI.
- b-11 is external pulse width input value.
- b-12 is VFD rated current.
- b-14 is water supply control when the set pressure of the pipeline.
- b-15 is water supply control feedback pipeline pressure.

VFD and single phase motor wiring

1. Keeping the capacitor, Connect the motor to the UW or VW of the VFD. Reverse the motor according to the motor nameplate.
2. Remove the capacitor:



3. If you want a single-phase motor to reverse, you need to connect according to the motor nameplate instructions.

Application

Note: For detailed parameter explanation, please refer to the full manual. Start and stop of panel control, and panel potentiometer setting frequency

Parameter setting:

According to transducer, drag the motor's rated nameplate data and conduct parameter setting for parameters P0.07 and P0.08. The parameters that must be set up are stated as follows:

- **[P0.01]=0:** parameter P0.01 is set up as 0; select the panel potentiometer setting frequency,
- **[P0.03]=0:** parameter P0.03 is set up as 0; select panel to start and stop control.

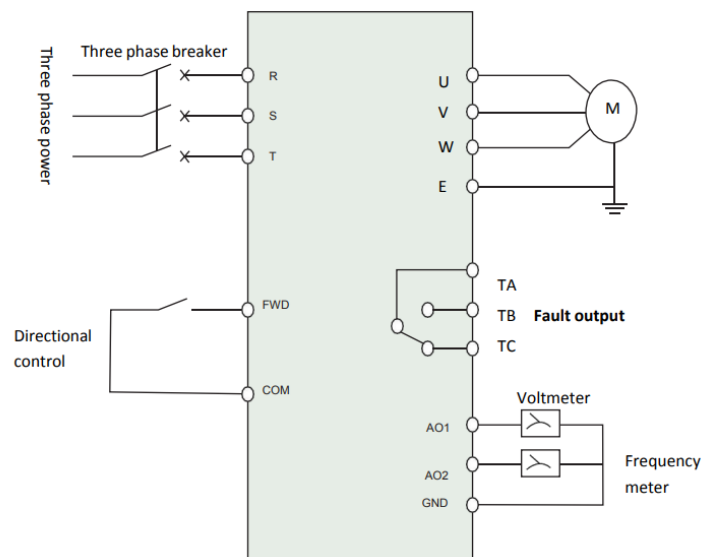


Figure 10-1 Panel Control Starting and Stopping, and Basic Wiring Diagram of Panel Potentiometer Setting Frequency

Operating instructions

Press FWD to start the transducer; rotate the panel potentiometer button in clockwise, set up the frequency

gradually, rotate the panel potentiometer button in anticlockwise, set up frequency to reduce gradually, and press STOP to close down the transducer.

Tips:

External control terminal FWD determines the operation direction of the motor; if FWD-COM is disconnected, the motor is forward; if FWD-COM is closed, the motor is reverse.

Three-wire system control mode

Parameter setting

According to the transducer, drag the motor's rated nameplate data and conduct parameter setting for parameters P0.07 and P0.08.

- **[P0.01]=0:** Parameter P0.01 is set up as 0. Select the panel potentiometer to confirm the frequency input.
- **[P0.03]=1:** Parameter P0.03 is set up as 1; select the external terminal control.
- **[P4.17]=2:** parameter P4.17 is set up as 2; select AO1 output as the voltage output.
- **[P4.19]=0:** parameter P4.19 is set up as 0, select AO2 output as frequency output.
- **[P4.08]=3:** parameter P4.08 is set up as 3, select external command mode as the three-wire mode 1.
- **[P4.00]=9:** parameter P4.00 is set up as 9, select input terminal 1 as three-wire operation control. Other parameters are set up in accordance with the specific circumstance.

Basic wiring diagram

The basic wiring diagram of three-wire control mode is shown in Figure 10-2(for reference only)

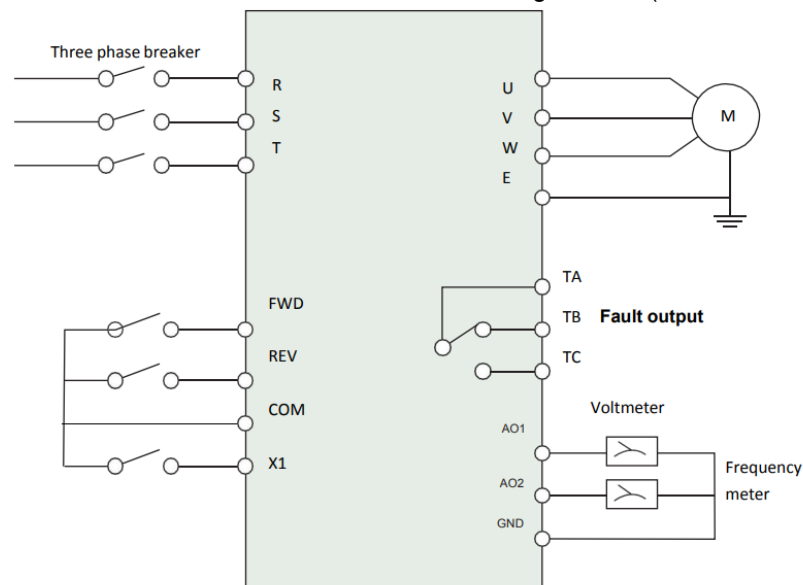


Figure 10-2 The Basic Wiring Diagram of Three-wire Control Mode

Operating instructions

Close FWD, X1 and COM, forward motor(forward command); close REV, X1 and COM, reverse motor(reverse command); disconnect FWD, X1 and COM simultaneously or disconnect one of them or close REV; close down the transducer; disconnect FWD, X1 and COM simultaneously or disconnect one of them or close FWD, and close down the transducer.

External control mode and external voltage setting frequency

Parameter setting:

According to transducer, drag the motor's rated nameplate data and conduct parameter setting for parameters P0.07 and P0.08 the parameters that must be set up are stated as follows:

- [P0.01]=5, select VI as the given signal of frequency; 0-10V voltage is the given frequency source;
- [P0.03]=1, select external terminal command channel;

Basic wiring diagram

The basic wiring diagram of external control mode and external voltage setting frequency is shown in Figure 10-3(for reference only).

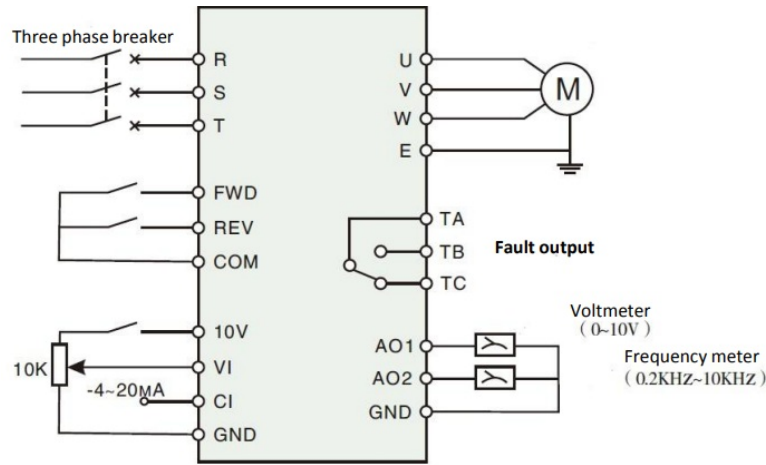


Figure10-3 Basic Wiring Diagram of External Control Mode and External Voltage Setting Frequency

If FWD-COM is closed, the motor is forward (forward command); if REV-COM is closed, the motor is reverse (reverse command). If FWD-COM and REV-COM is closed or disconnected simultaneously, the transducer will close down. The setting frequency is confirmed by external voltage signals (VI).

Tips:

Parameter P0.01 setting; select any line in external input VI and CI as the frequency setting signal.

Multi-stage operation and external control mode

Parameter setting:

According to the transducer, drag the motor's rated nameplate data and conduct parameter setting for parameters P0.07 and P0.08. [P0.03]1: Select external terminal command channel.

- [P3.26]- [P3.32]: Select multi-stage frequency setting.
- [P4.00]=1: External terminal X1 selects multi-stage control terminal 1.
- [P4.01]=2: External terminal X2 selects multi-stage control terminal 2.
- [P4.02]=3: External terminal X3 selects multi-stage control terminal 3.
- [P4.03]=11: External terminal X4 selects external stop instruction.

Basic wiring diagram

The basic wiring diagram of multi-stage operation and external control mode is shown in Figure 10-4(for reference only).

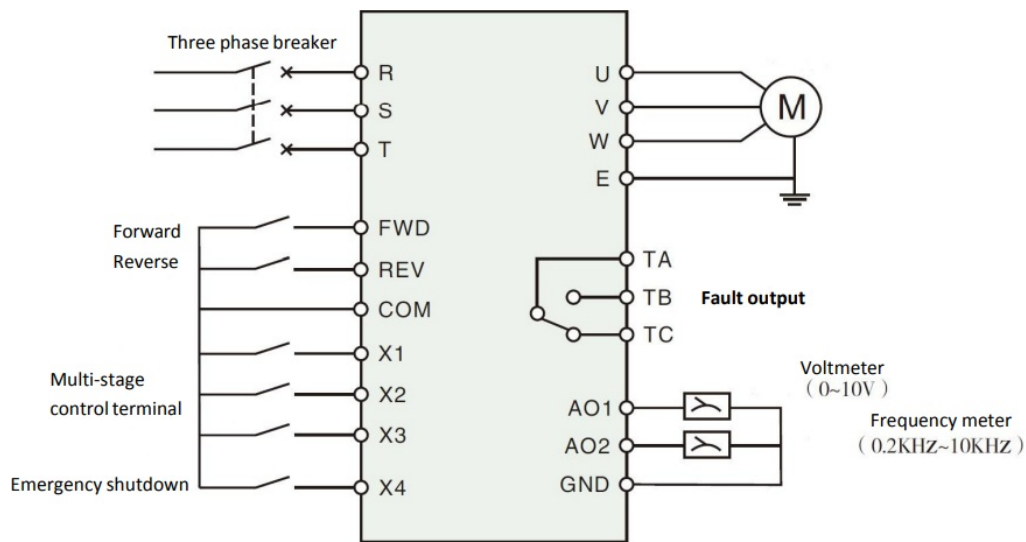


Figure 10-4 Basic Wiring Diagram of Multi-stage Operation and External Control Mode

Figure 10-4 Basic Wiring Diagram of Multi-stage Operation and External Control Mode

If FWD-COM is closed, the motor is forward (forward command); if REV-COM is closed, the motor is reverse (reverse command). If FWD-COM and REV-COM are closed or disconnected simultaneously, the transducer will close down. X1, X2 and X3 are disconnected with COM. Multi-stage operation is invalid. The transducer is operated according to the established command frequency (frequency setting channel is selected by parameter P0.01).

If one or multiple terminals in X1, X2 and X3 is closed with COM terminal (seven combinations), the transducer is operated by the multi-stage frequency of X1, X2 and X3 (multi-stage frequency setting value is confirmed by parameters P3.26-P3.32).

Use a transducer to constitute in one-drag and one-constant pressure water supply control system.

Parameter settings

Parameters that must be set up are shown as follows:

- **[P7.00]=1:** Parameter P7.00 is set up as 1, select the closed-loop control mode.
- **[P7.05]=constant value:** Parameter P7.05 is set up for the given digital quantity—the setting value of constant.
- **[P7.19]=revival pressure:** Parameter P7.19 is the revival pressure setting.
- **[P7.20]=Sleep pressure:** parameter P7.20 is the survival pressure setting.
- **[P7.26]=1:** Parameter P7.26 is set up as 1, select one-drag and one-constant water supply.
- **[P7.27]=1.000:** remote pressure gage range; modify according to the actual pressure gage.

Basic wiring diagram

The transducer constitutes in the closed-loop control system with the wiring diagram as Figure 10-5 (for reference only).

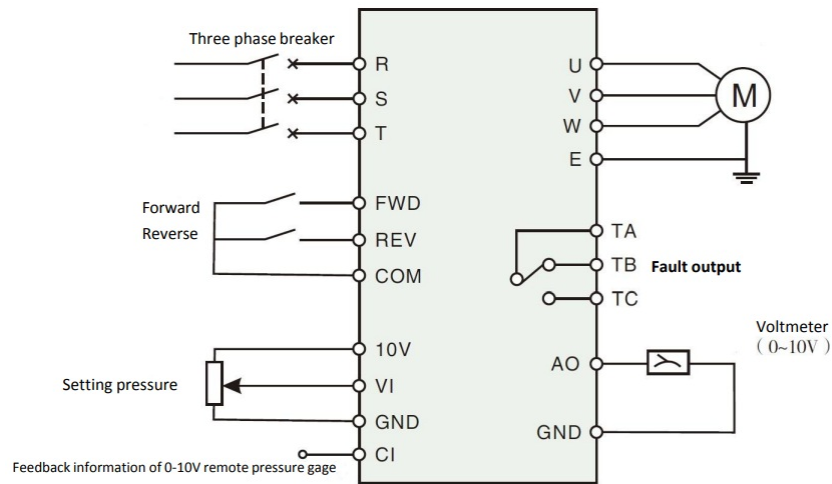


Figure 10-5 The Wiring Diagram of Closed-loop Control System Constituted by the Transducer

FAQ's

Where can I find a detailed parameter explanation?

For a detailed parameter explanation, please refer to the full manual.

Documents / Resources

	<p>ATO AT0-2HP-NE-VFD Single Phase Input and Output [pdf] Instruction Manual ATO-2HP-NE-VFD Single Phase Input and Output, ATO-2HP-NE-VFD, Single Phase Input and Output, Phase Input and Output, Input and Output, Output</p>
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References

- [User Manual](#)