Fafeicy AT4-2200X

Fafeicy AT4-2200X VFD Frequency Converter User Manual

Model: AT4-2200X | Brand: Fafeicy

1. Introduction

The Fafeicy AT4-2200X VFD (Variable Frequency Drive) Frequency Converter is designed for precise speed control of three-phase 380VAC motors. With a power capacity of 2.2KW and a single-phase 220VAC input, this universal speed controller offers high performance and reliability for a wide range of industrial applications. Its advanced V/F control method ensures high torque and precision, while the humanized design and robust cooling system contribute to stable and efficient operation.

2. Safety Precautions

WARNING: Failure to follow these safety instructions may result in death, serious injury, or severe equipment damage.

- Ensure the VFD is installed by qualified personnel only.
- Always disconnect power before installation, wiring, or maintenance. Wait for the charge indicator to extinguish completely.
- Connect the U, V, W terminals correctly to the AC power supply. Incorrect wiring can damage the inverter.
- Do not install the inverter in environments with flammable, corrosive, or explosive gases to prevent fire or explosion hazards.
- The inverter contains high voltage and high temperature components. Do not open the casing unless specifically instructed by a qualified technician.
- Ensure proper grounding of the unit.

Figure 2.1: Front view of the VFD Frequency Converter, showing the control panel and a safety precautions label.

3. Product Overview

The Fafeicy AT4-2200X VFD is engineered for robust performance and ease of use. Key features include:

- **V/F Control Method:** Provides high torque, high precision, and a wide speed control range for demanding applications.
- **Humanized Design:** Features a user-friendly keyboard for intuitive operation and a clear display for monitoring.
- **Efficient Heat Dissipation:** Equipped with a stainless steel base fan heat sink and powerful imported fans for rapid cooling, preventing overheating.
- **Durable Construction:** The casing is made from ABS material, offering heat resistance, flame retardancy, and shock protection.
- **Wide Application Range:** Suitable for various industrial machinery such as spindle motors, textile machines, lathes, milling machines, pumps, conveyors, mixers, extruders, and separators.
- **Prevention Trip Function:** Enhanced stability and adaptability to power interference, temperature, humidity, and dust.

- **Optimized PWM Control:** Minimizes noise and electromagnetic interference for a cleaner operational environment.

Figure 3.1: The Fafeicy VFD Frequency Converter integrated into an industrial automation setup.

4. Specifications

Parameter	Value
Model	AT4-2200X
Application Range	Universal
Power Phase Number	Single-phase
Input Method	Single-phase 220VAC
Output Mode	Three-phase 380VAC
Supply Voltage	220VAC 50/60Hz

Adapted Motor Power	2.2 kW
Filter	Without filter
DC Power Properties	Voltage type
Control Mode	V/F closed loop
Output Voltage Regulation Mode	PWM control
Appearance	Plastic casing
Rated Current	8A
Maximum Output Frequency	400Hz
Dimensions (L x H x T)	Approx. 125 x 180 x 125 mm (4.9 x 7.1 x 4.9 inches)
Weight	1430 Grams

Figure 4.1: Dimensions of the Fafeicy AT4-2200X VFD Frequency Converter.

5. Setup and Installation

Proper installation is crucial for the safe and efficient operation of the VFD. It is recommended that installation be performed by a certified electrician.

5.1 Mounting

- Mount the VFD vertically on a stable, non-flammable surface.
- Ensure adequate clearance around the unit for proper ventilation and heat dissipation. Refer to Figure 4.1 for dimensions.
- Avoid mounting in direct sunlight, high humidity, or dusty environments.

5.2 Wiring

- **Power Input:** Connect the single-phase 220VAC power supply to the designated input terminals (typically L and N, or R and S).
- **Motor Output:** Connect the three-phase 380VAC motor to the U, V, W output terminals. Ensure correct phase sequence.
- **Grounding:** Connect the ground terminal of the VFD to a reliable earth ground.
- **Control Wiring:** If external control signals (e.g., start/stop, speed reference) are used, connect them to the appropriate control terminals as per the detailed wiring diagram in the full manual (not provided here).

Figure 5.1: Internal ribbon cable connection, illustrating modular design for control panel. This area should only be accessed by qualified technicians.

Figure 5.2: The VFD with its detachable control panel, showing the connection interface.

6. Operating Instructions

The VFD features a user-friendly control panel for easy operation.

6.1 Control Panel Overview

Figure 6.1: Close-up view of the VFD control panel with buttons and display.

- **Display:** Shows operational parameters such as frequency, current, voltage, and speed.
- **RUN Button (Green):** Initiates motor operation.
- **STOP/RESET Button (Red):** Stops motor operation or resets fault conditions.
- **FWD/REV Buttons:** Controls forward and reverse direction of the motor.
- **PROG Button:** Enters programming mode to adjust parameters.
- **FUNC/DATA Button:** Used to select functions or view data.
- **DISP Button:** Cycles through different display parameters.
- **Rotary Knob:** Adjusts frequency or parameter values.

6.2 Basic Operation

1. **Power On:** Ensure all wiring is correct and secure, then apply power to the VFD. The display will light up.
2. **Set Frequency:** Use the rotary knob to set the desired output frequency. The display will show the current frequency setting.

3. **Start Motor:** Press the **RUN** button to start the motor. The motor will accelerate to the set frequency.
4. **Adjust Speed:** While the motor is running, turn the rotary knob to increase or decrease the motor speed.
5. **Stop Motor:** Press the **STOP/RESET** button to stop the motor. The motor will decelerate and stop.
6. **Change Direction:** Press the **FWD** or **REV** button to change the motor's rotation direction. This may require stopping the motor first, depending on parameter settings.

For advanced parameter settings and detailed programming instructions, please refer to the comprehensive programming manual.

7. Maintenance

Regular maintenance ensures the longevity and reliable operation of your Fafeicy VFD.

- **Cleaning:** Periodically clean the exterior of the VFD with a soft, dry cloth. Ensure ventilation openings are free from dust and debris.
- **Fan Inspection:** Check the cooling fans for proper operation and cleanliness. Dust accumulation can impede airflow and lead to overheating.
- **Connection Checks:** Regularly inspect all electrical connections for tightness and signs of corrosion or damage.
- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges.
- **Capacitor Life:** Electrolytic capacitors have a finite lifespan. If the VFD is in continuous operation for several years, consider professional inspection or replacement of capacitors.

Figure 7.1: Bottom view of the VFD, highlighting the cooling fins and fans critical for heat dissipation.

8. Troubleshooting

This section provides basic troubleshooting steps for common issues. For complex problems, contact technical support.

Problem	Possible Cause	Solution
VFD does not power on	No input power; Blown fuse; Incorrect wiring	Check power supply; Inspect fuses; Verify wiring connections.
Motor does not run	VFD in STOP mode; Fault condition; Incorrect motor wiring; Parameter settings	Press RUN; Check display for fault codes and reset; Verify motor wiring (U,V,W); Review parameter settings.
Motor runs erratically or at wrong speed	Incorrect frequency setting; Loose control wiring; Motor overload	Adjust frequency knob; Check control signal connections; Reduce motor load; Check motor parameters.

Overheat fault	Insufficient ventilation; Blocked cooling fins/fans; Ambient temperature too high	Ensure proper clearance; Clean fins and fans; Reduce ambient temperature; Check fan operation.
Overcurrent fault	Motor overload; Short circuit in motor wiring; Rapid acceleration/deceleration	Reduce motor load; Check motor and wiring for shorts; Adjust acceleration/deceleration times in parameters.

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact your vendor. Keep your purchase receipt as proof of purchase.