Saved from manuals.plus.
Open the live page for links to other documents and user manuals.

TenNuoDa AT1-4000X

TenNuoDa AT1-4000X VFD Single-Phase 220V Vector Control Frequency Inverter User Manual

Model: AT1-4000X | Brand: TenNuoDa

1. Safety Precautions

Please read all safety instructions carefully before installation and operation to prevent injury or property damage.

- Do not operate the device in any manner other than specified, as this may lead to severe injury or property loss.
- Always disconnect power before performing any wiring or maintenance.
- Never connect the U, V, W output terminals directly to an AC power supply; doing so will cause irreparable damage to the inverter.
- Do not install the inverter on flammable surfaces or near flammable materials to avoid fire hazards.
- Ensure the inverter's ground terminal is properly connected to an earth ground.
- Avoid installing the device in environments with explosive gases to prevent explosion risks.
- Only qualified personnel should perform wiring. The converter contains high voltage internally; do not open the casing without proper authorization.

2. Product Overview

The TenNuoDa AT1-4000X VFD is a single-phase 220V vector control frequency inverter designed for precise motor speed regulation. It features a robust aviation aluminum body for efficient heat dissipation and a durable alloy casing for enhanced protection. This VFD is engineered for high performance, offering stable operation across a wide range of applications, including CNC machine tools.



Figure 2.1: Front view of the TenNuoDa AT1-4000X VFD.

Key Features:

- **High Performance:** Utilizes a unique control method for high torque, high precision, and a wide speed regulation range.
- **Enhanced Stability:** Features good anti-trip performance and adaptability to power fluctuations, temperature, humidity, and dust.
- **Low Noise Operation:** Optimized PWM control technology and electromagnetic compatibility minimize noise and interference.
- **Durable Construction:** Aviation aluminum body with an alloy casing ensures strong heat dissipation and long-term durability.
- **Comprehensive Protection:** Includes safeguards against overheating, under/over voltage, and short circuits.
- **User-Friendly Display:** LCD screen provides real-time status updates for voltage, current, power, and protection alerts.
- **Versatile Application:** Converts single-phase input to three-phase output, suitable for various AC motor applications with 0-400Hz frequency control.

3. Control Panel Instruction

The control panel provides an interface for monitoring and operating the VFD. Familiarize yourself with the buttons and indicators for effective control.

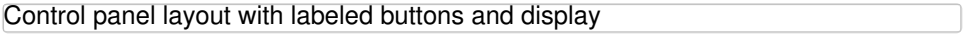


Figure 3.1: Control Panel Layout and Functions.

Button Functions:

- **5-digit LED display:** Shows current operating parameters such as frequency, speed, voltage, and current.
- **DISP Button:** Cycles through different display parameters on the LED screen.
- **PROG Button:** Enters or exits the programming mode for setting advanced parameters.
- **FUNG/DATA Button:** Used to access function parameters and confirm data entries during programming.
- **FWD/REV Button:** Toggles the motor's rotation direction between forward (clockwise) and reverse (counter-clockwise).
- **Up Button (▲):** Increases numerical values or navigates upwards in menus.
- **RUN Button:** Initiates motor operation.
- **STOP/RESET Button:** Stops motor operation or clears fault/error conditions.
- **Down Button (▼):** Decreases numerical values or navigates downwards in menus.

Function Indicator Lights:

- **FWD:** Illuminates when the motor is rotating in the clockwise direction.
- **REV:** Illuminates when the motor is rotating in the counter-clockwise direction.
- **r/min:** Illuminates when the display shows motor speed in revolutions per minute.
- **Hz:** Illuminates when the display shows output frequency in Hertz.
- **V:** Illuminates when the display shows output voltage in Volts.
- **A:** Illuminates when the display shows output current in Amperes.

4. Specifications

Parameter	Value
Model	AT1-4000X
Rated Voltage	AC220V (Single-phase)
Suitable Motor Power	4 kW
Control Method	V/F Open Loop
Output Voltage Regulation	PWM Control
Rated Current	20 A
Max Output Frequency Range	0 - 400 Hz
Product Dimensions (L x W x H)	12 x 17 x 15 cm

Parameter	Value
Manufacturer	TenNuoDa
Manufacturer Reference	TenNuoDakfgsrd5ye8

5. Setup & Installation

Proper installation and wiring are crucial for the safe and efficient operation of the VFD. Ensure all connections are made correctly and securely.

Wiring Diagram:

Electrical wiring diagram for the VFD showing input, output, and control connections

Figure 5.1: VFD Wiring Diagram.

Connection Steps:

1. **Power Disconnection:** Before starting any wiring, ensure that the main power supply is completely disconnected to prevent electrical shock.
2. **Input Power Connection:** Connect the single-phase 220V AC power supply to the **L** and **N** terminals of the VFD. It is recommended to use a 2-phase circuit breaker for protection.
3. **Ground Connection:** Connect a reliable ground wire to the **GND** terminal of the VFD. Proper grounding is essential for safety and to minimize electromagnetic interference.
4. **Motor Output Connection:** Connect the three-phase AC motor to the **U**, **V**, and **W** output terminals. Ensure the motor is rated for three-phase operation.
5. **Control Terminal Connections (Optional):** For advanced control, refer to the wiring diagram for connections to terminals such as X1-X6 (digital inputs), COM (common), VL1/CI (analog voltage input), 10V/5V (reference voltage), 15V (power supply), and SP1 (open collector output). These are used for external control signals.
6. **Secure Connections:** After all wires are connected, ensure all terminal screws are tightened securely to prevent loose connections and potential hazards.

6. Operating Instructions

This section outlines the basic steps for operating your TenNuoDa AT1-4000X VFD.

1. **Power On:** After verifying all connections are correct and secure, apply power to the VFD. The LED display should illuminate.
2. **Display Monitoring:** Use the **DISP** button to cycle through various operational parameters on the LED display, such as output frequency (Hz), motor speed (r/min), output voltage (V), and output current (A).
3. **Direction Selection:** Press the **FWD/REV** button to select the desired motor rotation direction. The corresponding FWD or REV indicator light will illuminate.

4. **Speed/Frequency Adjustment:** Use the **Up (▲)** and **Down (▼)** buttons to adjust the output frequency, which controls the motor speed.
5. **Start Motor:** Press the **RUN** button to start the motor. The motor will accelerate to the set frequency.
6. **Stop Motor:** Press the **STOP/RESET** button to stop the motor. The motor will decelerate and come to a halt.
7. **Parameter Programming:** For advanced settings (e.g., acceleration/deceleration times, maximum frequency limits), press the **PROG** button to enter programming mode. Use the Up/Down buttons to navigate and the **FUNG/DATA** button to select and confirm parameters. Refer to a detailed programming guide for specific parameter codes and values.

7. Maintenance

Regular maintenance helps ensure the longevity and reliable operation of your VFD.

- **Cleaning:** Periodically inspect the VFD for dust and debris, especially on the cooling fins and fan blades. Use compressed air to gently clean these areas. Ensure power is disconnected before cleaning.
- **Connection Check:** Regularly check all electrical connections for tightness. Loose connections can cause overheating or intermittent operation.
- **Ventilation:** Ensure that the VFD has adequate ventilation and that its air inlets and outlets are not obstructed. Proper airflow is critical for heat dissipation.
- **Grounding Integrity:** Verify that the ground connection remains secure and intact.
- **Environmental Conditions:** Protect the VFD from excessive moisture, corrosive gases, direct sunlight, and extreme temperatures.
- **Visual Inspection:** Look for any signs of physical damage, discoloration, or unusual odors, which may indicate a problem.

8. Troubleshooting

This section provides solutions to common issues you might encounter with the VFD.

Problem	Possible Cause	Solution
No power/Display off	No input power; Blown fuse/breaker	Check input power supply (L, N terminals); Verify circuit breaker status.
Motor not running	Incorrect motor wiring; RUN button not pressed; Frequency set to 0 Hz; Error code displayed	Check motor connections (U, V, W); Press RUN button; Increase frequency setting; Check and clear error codes.
Overload protection trip	Motor load too high; Incorrect motor parameters	Reduce motor load; Check motor current (A indicator); Verify motor parameters in VFD settings.

Problem	Possible Cause	Solution
Overvoltage/Undervoltage alarm	Unstable input voltage; Input voltage mismatch	Check input voltage stability; Ensure input voltage matches VFD's rated 220V AC.
Overheating alarm	Poor ventilation; High ambient temperature; Blocked cooling fins/fan	Ensure proper ventilation; Clear cooling fins; Verify cooling fan operation; Reduce ambient temperature.
Incorrect rotation direction	FWD/REV setting incorrect; Motor wiring phase sequence	Use FWD/REV button to change direction; If persistent, swap any two of the U, V, W motor output wires (only if FWD/REV button is ineffective).

9. Warranty & Support

TenNuoDa is committed to providing high-quality products and customer satisfaction.

For detailed warranty information, including coverage period and terms, please refer to the documentation included with your product or contact TenNuoDa customer service directly. Keep your purchase receipt as proof of purchase for any warranty claims.

For technical support, troubleshooting assistance beyond this manual, or service inquiries, please contact TenNuoDa through their official website or the contact information provided on your product packaging.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

Open the live page

https://manuals.plus/asin/B09L4ZPK2T

More documents and user manuals: **https://manuals.plus/**