

FBT VS500-4T0075G/4T0110P

VS500 Engraving Machine Dedicated Inverter User Manual

Model: VS500-4T0075G/4T0110P | Brand: FBT

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of the FBT VS500 series inverter, specifically models VS500-4T0075G/4T0110P. The VS500 series is a general-purpose inverter widely used in various industrial applications, including machine tools, electricity, textile, transportation, transmission, paper, cable, and metallurgy. It is designed for precise control of motor speed and torque in engraving machines and CNC routers.

2. PRODUCT OVERVIEW



Figure 1: FBT VS500 Series Inverters. The image displays two models of the VS500 series inverter, highlighting their compact design and

user interface with digital readouts and control buttons.

2.1 Key Features

- **Compact Design:** Reduced volume (20%-30% smaller than traditional general inverters) with independent cooling duct and closed main loop design.
- **Droop Control Function:** Automatically balances power of drive systems for inverters on the same transmission chain.
- **Efficient Cooling:** Utilizes DC fans for large volume, high wind pressure, excellent cooling, and stable performance.
- **Adaptive Control Technology:** Features self-adaptive control for automatic current and voltage limitation and under-voltage suppression during operation.
- **Communication Interface:** Standard RS485 communication interface with optional MODBUS protocol and SUNFAR self-defined protocol for easy integration with PLCs and industrial PCs.
- **Load Auto-Balancing:** When RS485 communication linkage control is used, the master motor sends frequency and torque load commands to slave motors for torque balancing.

3. SAFETY INFORMATION

Always observe the following safety precautions to prevent personal injury or damage to the equipment. This inverter operates at high voltages and can store dangerous electrical charges even after power is disconnected.

WARNING

1. Refer to the instruction manual before installation and operation.

2. Do not connect AC power to output terminals U, V, W.

3. Do not remove any cover while applying power and at least 10 minutes after disconnecting power.

4. Securely ground the equipment.

4. SPECIFICATIONS

Parameter	Value
Brand	FBT
Model	VS500-4T0075G/4T0110P
Input Voltage	380 Volts
Output Voltage	380 Volts
Power	7.5KW
ASIN	B08QW6R97H

5. INSTALLATION AND SETUP

Proper installation is crucial for the performance and longevity of the inverter. Ensure all power is disconnected before beginning any installation procedures.

5.1 Mounting

- Mount the inverter vertically in a well-ventilated area, away from direct sunlight, excessive dust, moisture, or corrosive gases.
- Ensure sufficient clearance around the unit for proper airflow and heat dissipation. Refer to the product dimensions for minimum clearance requirements.
- Use appropriate fasteners to secure the inverter to a stable surface.

5.2 Wiring

- **Power Input (R, S, T):** Connect the 380V AC power supply to the designated input terminals. Ensure correct phase sequence.
- **Motor Output (U, V, W):** Connect the motor leads to the output terminals. Do not connect AC power to these terminals.
- **Grounding (PE):** Connect the protective earth (ground) terminal of the inverter to a reliable ground point. This is critical for safety.
- **Control Wiring:** Connect control signals (e.g., start/stop, speed reference, fault outputs) according to your system's requirements. Refer to the detailed wiring diagrams in the full technical manual for specific terminal assignments.
- Use appropriately sized cables for all connections to handle the rated current.

6. OPERATION

This section outlines the basic operational procedures for the VS500 inverter. For advanced settings and parameter adjustments, consult the comprehensive programming guide.

6.1 Basic Control Panel Functions

- **Display:** Shows operational status, frequency, current, voltage, and error codes.
- **RUN/STOP Buttons:** Initiate or halt motor operation.
- **FWD/REV Buttons:** Control motor direction (forward/reverse).
- **ESC/SET/UP/DOWN Buttons:** Navigate menus, adjust parameters, and confirm selections.
- **Potentiometer/Dial:** Used for manual frequency adjustment.

6.2 Starting the Inverter

1. Ensure all wiring is correct and secure.
2. Apply main power to the inverter. The display should illuminate.
3. Set the desired frequency using the control panel or external signal.
4. Press the **RUN** button to start the motor. The motor will accelerate to the set frequency.

6.3 Stopping the Inverter

1. Press the **STOP** button. The motor will decelerate and stop.
2. For emergency stops, use the dedicated emergency stop circuit if installed.

7. MAINTENANCE

Regular maintenance ensures optimal performance and extends the lifespan of your VS500 inverter. Always disconnect power before performing any maintenance.

- **Cleaning:** Periodically clean the inverter's exterior and ventilation openings to prevent dust accumulation, which can

impede cooling. Use a soft, dry cloth. Do not use liquid cleaners.

- **Fan Inspection:** Check cooling fans for proper operation and cleanliness. Replace noisy or malfunctioning fans.
- **Terminal Tightness:** Annually check all wiring terminals for tightness. Loose connections can cause overheating and damage.
- **Environmental Check:** Ensure the operating environment remains within specified temperature and humidity ranges.
- **Capacitor Life:** Electrolytic capacitors have a finite lifespan. While not user-serviceable, be aware that performance may degrade over many years of continuous operation.

8. TROUBLESHOOTING

This section provides common issues and their potential solutions. For complex problems or issues not listed, contact technical support.

Problem	Possible Cause	Solution
Inverter does not power on	No input power; Blown fuse; Internal fault	Check power supply and circuit breaker. Inspect fuses. If problem persists, contact support.
Motor does not run	Incorrect wiring; Parameter settings; Overload; Emergency stop active	Verify motor and control wiring. Check parameter settings. Reduce load. Deactivate emergency stop.
Overcurrent fault (OC)	Motor short circuit; Sudden load change; Acceleration time too short	Check motor and wiring for shorts. Adjust acceleration time. Reduce load.
Overvoltage fault (OV)	Input voltage too high; Deceleration time too short; Regenerative load	Check input voltage. Increase deceleration time. Consider adding a braking resistor for regenerative loads.
Overheat fault (OH)	Insufficient cooling; Ambient temperature too high; Fan malfunction	Ensure proper ventilation. Check ambient temperature. Clean or replace cooling fan.

9. WARRANTY AND SUPPORT

FBT products are manufactured to high quality standards and are typically covered by a limited warranty against defects in materials and workmanship. Please refer to your purchase documentation or the official FBT website for specific warranty terms and conditions.

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact FBT customer support or your authorized distributor. When contacting support, please have your product model number (VS500-4T0075G/4T0110P) and serial number ready.

You can visit the FBT Store on Amazon for more information:[FBT Store](#)

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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.

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