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CAPTIVE-AIRE ESV751N02YXB571

Variable Frequency Drive (VFD) User Manual

Model: ESV751N02YXB571

Brand: CAPTIVE-AIRE

1. PRODUCT OVERVIEW

This manual provides essential information for the installation, operation, and maintenance of the CAPTIVE-AIRE Variable Frequency Drive (VFD), Model ESV751N02YXB571. This VFD is designed for use with Demand Control Ventilation and Smart Control Electrical Panels, rated for 1 HP Max., 200/240 V, Single or Three Phase Input, with a maximum output current of 4.2 A. It features a NEMA 1 Enclosure and includes two RJ-45 ports for MODBUS communication. Please note that the VFD is shipped with manufacturer default settings, and application-specific parameter setup is required for optimal performance.



Figure 1: Front view of the CAPTIVE-AIRE VFD, Model ESV751N02YXB571. The unit is blue with a control panel displaying a digital readout, navigation buttons (up, down, M, R/F), and operation buttons (AUTO, FWD, REV, RUN, STOP). A label indicates "ESV751N02YXB571, 1 HP, 240 V, Output Current: 4.2 A". The side features ventilation grilles and a manufacturer label from Lenze AC Tech.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent personal injury or damage to the equipment.

- **WARNING:** This device stores electrical charge for up to 180 seconds (3 minutes) after removing mains voltage. Always wait for the specified discharge time before handling or servicing the unit to avoid electric shock.
- **WARNING:** If the Branch Circuit Protection (BCP) opens, refer to the full instruction manual for detailed troubleshooting and safety procedures before attempting to reset or re-energize the unit.
- Ensure all wiring is performed by qualified personnel in accordance with local and national electrical codes.
- Verify that the power supply matches the VFD's voltage and current ratings.
- Do not operate the VFD with damaged cables or if the enclosure is open.

3. SPECIFICATIONS

| Parameter | Value |
|-------------------------|--|
| Model Number | ESV751N02YXB571 |
| Brand | CAPTIVE-AIRE (Manufactured by Lenze AC Tech) |
| Maximum Horsepower (HP) | 1 HP (0.75 KW) |
| Input Voltage | 200/240 V AC |
| Input Phase | Single or Three Phase |
| Input Current (Max) | 5.0 A |
| Output Voltage | 0-230 V AC |
| Output Current (Max) | 4.2 A |
| Output Frequency Range | 0-500 Hz |
| Enclosure Type | NEMA 1 Rated Plastic Enclosure |
| Communication Ports | 2 x RJ-45 for MODBUS |
| Item Weight | 3 pounds |
| Serial Number (Example) | 13459533360291717 |

4. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of the VFD. Refer to the full manual for detailed wiring diagrams and mounting instructions.

1. **Mounting:** Select a suitable location that is clean, dry, well-ventilated, and free from excessive vibration or extreme temperatures. Ensure adequate clearance for cooling.
2. **Power Wiring:** Connect the incoming AC power supply to the designated input terminals (L1, L2, L3 for three-phase or L1, L2 for single-phase) and the ground terminal. Ensure proper wire sizing and overcurrent protection.
3. **Motor Wiring:** Connect the motor leads to the VFD's output terminals (U, V, W). Ensure the motor is compatible with VFD operation and correctly wired for the desired rotation.
4. **Control Wiring:** Connect any external control signals (e.g., start/stop, speed reference, fault relays) to the appropriate control terminals.

5. **Communication (MODBUS):** If using MODBUS, connect the RJ-45 cables to the VFD's communication ports and to your control system.
6. **Initial Parameter Setup:** The VFD ships with default settings. It is essential to configure application-specific parameters such as motor nominal voltage, current, frequency, and acceleration/deceleration times before operation. Consult the comprehensive manual for parameter programming details.

5. OPERATING INSTRUCTIONS

The VFD features a user-friendly control panel for basic operation. For advanced functions and parameter adjustments, refer to the detailed programming guide.

- **Power On:** Apply mains voltage to the VFD. The display will illuminate.
- **RUN Button (Green):** Press to start the motor. The VFD will accelerate the motor to the set frequency.
- **STOP Button (Red):** Press to stop the motor. The VFD will decelerate the motor to a stop.
- **Up/Down Arrows (▲ / ▼):** Used to navigate menus and adjust parameter values.
- **M (Menu) Button:** Accesses the VFD's parameter menus for configuration.
- **R/F (Reverse/Forward) Button:** Toggles the motor's direction of rotation (Forward/Reverse) when in manual mode.
- **AUTO Mode:** Indicates operation under external control (e.g., via MODBUS or digital inputs).
- **FWD/REV Indicators:** Show the current direction of motor rotation.

Note: The VFD's behavior (e.g., speed reference source, start/stop command source) depends on the configured parameters. Ensure these are set correctly for your application.

6. MAINTENANCE

Regular maintenance helps ensure the longevity and reliable operation of your VFD. Always disconnect power and wait for the discharge time (180 seconds) before performing any maintenance.

- **Cleaning:** Periodically clean the VFD's exterior and cooling fins to prevent dust buildup, which can impede heat dissipation. Use a soft, dry cloth. Do not use liquid cleaners.
- **Fan Inspection:** Check the cooling fan for proper operation and ensure it is free from obstructions. Replace if noisy or not functioning correctly.
- **Terminal Connections:** Annually inspect all power and control terminal connections for tightness. Loose connections can cause overheating and intermittent operation.
- **Environmental Check:** Ensure the operating environment remains within the specified temperature and humidity ranges.

7. TROUBLESHOOTING

This section provides general guidance for common issues. For detailed fault codes and advanced troubleshooting, consult the comprehensive VFD manual.

| Problem | Possible Cause | Solution |
|-----------------------|--|--|
| VFD does not power on | No input power; Blown fuse/breaker; Incorrect wiring | Check power supply; Inspect fuses/breakers; Verify wiring connections. |

| Problem | Possible Cause | Solution |
|--------------------|--|---|
| Motor does not run | Stop command active; Incorrect parameter settings; Motor fault | Check control signals; Verify run command; Review VFD parameters; Check motor for issues. |
| Overcurrent fault | Motor overload; Short circuit in motor/cables; Incorrect acceleration time | Reduce load; Check motor and cables for damage; Increase acceleration time. |
| Overvoltage fault | High input voltage; Rapid deceleration; Regenerative load | Check input voltage; Increase deceleration time; Consider braking resistor if applicable. |

8. WARRANTY AND SUPPORT

CAPTIVE-AIRE products are manufactured to high standards and are backed by a manufacturer's warranty. For specific warranty terms and conditions, please refer to the documentation included with your purchase or visit the official CAPTIVE-AIRE website.

For technical support, troubleshooting assistance, or spare parts inquiries, please contact CAPTIVE-AIRE customer service. When contacting support, please have your VFD model number (ESV751N02YXB571) and serial number (e.g., 13459533360291717) readily available.

You can visit the [CAPTIVE-AIRE Store on Amazon](#) for more product information.