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LEPREM 9600D-3T

LEPREM 9600D-3T 380V Three-Phase Variable Frequency Drive (VFD) User Manual

Model: 9600D-3T | Manufacturer Model: 1005003239132448

1. Introduction

This manual provides essential instructions for the safe and efficient operation, installation, and maintenance of the LEPREM 9600D-3T Variable Frequency Drive (VFD). This device is designed to control and adjust the speed of AC motors, offering precise control for various industrial applications, including water-cooled spindle motors. Please read this manual thoroughly before installation or operation to ensure proper usage and to prevent damage to the unit or associated equipment.

2. Safety Information

WARNING: Improper installation or operation can lead to serious injury or death, and damage to equipment. Only qualified personnel should perform installation, wiring, and maintenance.

- Always disconnect power before performing any wiring or maintenance.
- Ensure proper grounding of the VFD and the motor.
- Do not touch internal components immediately after power-off, as residual voltage may be present. Wait for the charge indicator to extinguish.
- Install the VFD in a clean, dry, and well-ventilated environment, away from direct sunlight, corrosive gases, and flammable materials.
- Verify that the input voltage matches the VFD's rated voltage (3-phase 380V).
- Protect the VFD from dust and moisture. The unit has an IP20 protection level.

3. Product Overview

3.1 Key Features

- Humanized keypad design for convenient operation and clear display.
- Intelligent and efficient motherboard with three-proof paint treatment (dust-proof, stable, durable).
- Dual-layer board design for reasonable structure and enhanced safety, reducing failure rates.
- High-quality industrial flame-retardant ABS plastic casing, resistant to heat, flame, and impact.

- Efficient heat dissipation with a large aluminum base fan plate combined with a powerful imported fan.
- Comprehensive fault protection, including overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload (up to 25 types).

3.2 Components and Interface

The LEPREM 9600D-3T VFD features a user-friendly control panel and clearly labeled terminals for easy connection.



Figure 3.2.1: Front view of the LEPREM 9600D-3T Variable Frequency Drive. This image displays the control panel with its display screen, function buttons (PRG/ESC, RD/WT, MF.K/REV, navigation arrows), RUN and STOP/RESET buttons, and a rotary knob for frequency adjustment. Status indicator LEDs for FLT, REV, RUN, HZ, A, V, and PWR are also visible. Input and output terminals are located at the top and bottom of the unit.



Figure 3.2.2: Angled front-right view of the VFD, showing the control panel and the side ventilation grilles. This perspective highlights the compact design and the placement of the Ethernet port on the right side.



Figure 3.2.3: Angled rear-left view of the VFD, illustrating the cooling fan at the bottom and the various terminal blocks for control and power connections. The heatsink fins are visible on the left side.





Figure 3.2.4: Top view of the VFD, detailing the input power terminals (top) and the control terminals (middle-right). This view provides a clear layout of the connection points for both power supply and external control wiring.

4. Setup and Installation

4.1 Mounting

- Mount the VFD vertically on a stable, non-flammable surface.
- Ensure adequate clearance around the unit for proper ventilation (minimum 10cm above and below, 5cm on sides).
- Avoid mounting in areas subject to excessive vibration, dust, or moisture.

4.2 Wiring

Refer to the wiring diagram provided with the unit for specific connections. The following is general guidance:

- **Input Power (R, S, T):** Connect the 3-phase 380V AC power supply to these terminals.
- **Output Power (U, V, W):** Connect the 3-phase AC motor to these terminals.
- **Ground (PE):** Connect the VFD to a reliable earth ground.
- **Control Terminals:** Use the designated terminals (e.g., X1-X4 for digital inputs, AI1/AI2 for analog inputs, 485+ / 485- for communication) for external control signals, such as start/stop commands, speed reference, and fault indications.
- Ensure all wiring is securely fastened and uses appropriate gauge wires for the current rating.



Figure 4.2.1: Angled top-left view of the VFD, showing the main power input terminals (top) and the control signal terminals (middle-right). This image helps in identifying the correct connection points for both power supply and external control wiring.





Figure 4.2.2: Bottom view of the VFD, clearly showing the large aluminum heatsink fins and the cooling fan. This design is crucial for

dissipating heat generated during operation, ensuring stable performance.

5. Operating Instructions

5.1 Control Panel Functions

The VFD features a user-friendly control panel for direct operation and parameter setting.

- **RUN Button (Green):** Initiates motor operation.
- **STOP/RESET Button (Red):** Stops motor operation and resets fault conditions.
- **PRG/ESC Button:** Enters/exits parameter programming mode.
- **RD/WT Button:** Reads or writes parameter values.
- **MF.K/REV Button:** Multi-function key, often used for reverse direction or specific functions.
- **Up/Down Arrows:** Navigate through menus and adjust parameter values.
- **Right/Left Arrows:** Shift cursor position during parameter editing.
- **Rotary Knob (LOC/REM):** Typically used for local frequency adjustment or switching between local/remote control.

5.2 Basic Operation

1. **Power On:** Apply 3-phase 380V AC power to the VFD. The display should illuminate.
2. **Set Frequency:** Use the Up/Down arrows or the rotary knob to set the desired output frequency (motor speed). The output frequency range is 0-400Hz.
3. **Start Motor:** Press the **RUN** button. The motor should begin to accelerate to the set frequency.
4. **Stop Motor:** Press the **STOP/RESET** button. The motor will decelerate and stop.

5.3 Control Modes

The VFD supports different control methods for motor speed adjustment:

- **V/F Control:** Voltage/Frequency control, suitable for general-purpose applications.
- **Open-loop Vector Control (SVC):** Sensorless Vector Control, provides improved speed regulation and torque control, especially at lower speeds.

The specific control mode can be selected and configured through the parameter settings.

6. Maintenance

- **Regular Cleaning:** Keep the VFD clean and free from dust and debris. Use compressed air to clean ventilation openings and cooling fins periodically.
- **Inspection:** Periodically inspect all wiring connections for tightness and signs of wear or damage. Check for any unusual noises or odors during operation.
- **Environmental Conditions:** Ensure the operating environment remains within specified temperature and humidity ranges.
- **Fan Check:** Verify that the cooling fan operates freely and is not obstructed.

7. Troubleshooting

The LEPREM 9600D-3T VFD is equipped with comprehensive protection features to ensure safe operation. If a fault occurs, the VFD will display an error code and stop operation. Refer to the full product manual for a complete list of error codes and their remedies.
Common fault protections include:

- Overcurrent
- Overvoltage
- Undervoltage
- Overtemperature
- Phase Loss
- Overload

In case of a fault, note the error code, press the **STOP/RESET** button to clear the fault, and then investigate the cause before restarting the VFD.

8. Specifications

Parameter	Value
Brand	LEPREM
Model	9600D-3T
Manufacturer Model Number	1005003239132448
Input Voltage	AC 3PH 380V ± 15% 50Hz-60Hz
Output Voltage	AC 3PH 0V-380V
Output Frequency Range	0Hz-650Hz
Corresponding Motor Power Options	0.75KW / 1.5KW / 2.2KW / 4KW
Rated Current (for respective power options)	2.5A / 3.7A / 5A / 8.5A
Control Method	Open-loop Vector Control (SVC), V/F Control
Output Voltage Adjustment Mode	PWM Control
Filter	Built-in filter
Protection Level	IP20
Machine Size (approx.)	82 x 155 x 45 mm
Product Weight	500 g

9. Warranty and Support

For warranty information and technical support, please refer to the documentation included with your purchase or contact your authorized LEPREM distributor. Keep your purchase receipt for warranty claims.

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