

Danfoss VLT5006PT5B20SBR3DLF00A00C0

Danfoss VLT5000 Series Variable Speed Drive User Manual

Model: VLT5006PT5B20SBR3DLF00A00C0

1. INTRODUCTION

This manual provides essential information for the safe and efficient installation, operation, and maintenance of the Danfoss VLT5000 Series Variable Speed Drive, model VLT5006PT5B20SBR3DLF00A00C0. The VLT5000 series is designed for precise control of AC motors in various industrial applications, offering energy efficiency and enhanced process control.

Please read this manual thoroughly before attempting any installation or operation procedures. Retain this manual for future reference.

2. SAFETY INFORMATION

WARNING: Electrical Hazard

- Only qualified personnel should install, operate, or service this equipment.
- Ensure all power is disconnected and locked out before performing any work on the drive or connected motor.
- Capacitors inside the drive can remain charged for several minutes after power is removed. Always wait for the discharge indicator to extinguish before touching any components.
- Proper grounding is essential to prevent electric shock.
- Adhere to all local and national electrical codes and safety regulations.

CAUTION: Equipment Damage

- Do not operate the drive with damaged components or wiring.
- Ensure proper ventilation to prevent overheating.
- Protect the drive from moisture, dust, and corrosive environments.

3. SETUP AND INSTALLATION

Careful installation is crucial for the reliable operation of the VLT5000 drive.

3.1 Unpacking and Inspection

Upon receiving the drive, inspect the packaging for any signs of damage. Open the package and verify that all components are present and undamaged. Report any discrepancies to your supplier immediately.

3.2 Mounting

Mount the drive vertically on a flat, stable surface. Ensure adequate clearance above and below the unit for proper airflow and heat dissipation. Refer to the drive's dimensions for specific mounting hole locations.



Figure 3.1: Front view of the Danfoss VLT5000 Variable Speed Drive. This image shows the main housing, the Danfoss logo, the 'VLT 5000' model designation, and indicator lights for ALARM, WARNING, and ON status.

3.3 Electrical Connections

All electrical connections must be performed by a qualified electrician in accordance with local and national electrical codes.

1. **Grounding:** Connect the drive to a reliable earth ground using the designated grounding terminal.
2. **Main Power Input:** Connect the three-phase AC power supply to the L1, L2, L3 terminals. Ensure the voltage and frequency match the drive's specifications.
3. **Motor Output:** Connect the motor leads to the U, V, W terminals.
4. **Control Wiring:** Connect control signals (e.g., start/stop, speed reference, feedback) to the appropriate control terminals. Refer to the wiring diagram for specific terminal assignments.



Figure 3.2: Internal view of the Danfoss VLT5000 drive with the front panel removed. This image displays the various terminal blocks for control wiring and power connections, with numbered terminals indicating connection points.



Figure 3.3: Bottom view of the Danfoss VLT5000 drive. This image highlights the main power input terminals (L1, L2, L3) and motor output terminals (U, V, W), along with designated grounding points for electrical safety.

4. OPERATING INSTRUCTIONS

The VLT5000 drive offers various operating modes and parameters for precise motor control.

4.1 Initial Power-Up

1. After all connections are secure, apply main power to the drive.
2. Observe the 'ON' indicator light on the front panel. It should illuminate, indicating the drive is powered.
3. Check for any 'ALARM' or 'WARNING' indicators. If illuminated, refer to the Troubleshooting section.

4.2 Basic Operation

The VLT5000 can be controlled via its local control panel (if equipped), digital inputs, or a fieldbus communication system.

- **Start/Stop:** Initiate motor operation via the designated start command (e.g., digital input, control panel button).
- **Speed Reference:** Adjust the motor speed using the configured speed reference source (e.g., analog input, potentiometer, fieldbus command).
- **Direction:** Change motor rotation direction if configured for bidirectional operation.

4.3 Parameter Settings

The drive's behavior is defined by its parameter settings. These can be accessed and modified via the control panel or communication interface. Common parameters include:

- Motor data (rated voltage, current, frequency, RPM)
- Ramp times (acceleration and deceleration)
- Minimum and maximum speed limits
- Control mode (V/f, vector control)
- Input/output configurations

Refer to the comprehensive programming guide for detailed parameter descriptions and adjustment procedures.

5. MAINTENANCE

Regular maintenance ensures optimal performance and extends the lifespan of your VLT5000 drive.

5.1 Routine Checks (Monthly)

- Inspect the drive for dust accumulation, especially on cooling fins and ventilation openings. Clean with compressed air if necessary.
- Check for loose connections on power and control terminals. Tighten if required.
- Verify that cooling fans are operating correctly and are free from obstructions.
- Inspect the surrounding environment for excessive heat, moisture, or corrosive substances.

5.2 Periodic Maintenance (Annually)

- Perform a thorough internal inspection (after ensuring power is disconnected and capacitors are discharged).
- Check for any signs of discoloration or damage on circuit boards and components.
- Measure insulation resistance of the motor and cabling if applicable.

NOTE: Do not attempt to repair internal components. Contact authorized service personnel for repairs.

6. TROUBLESHOOTING

This section provides guidance for common issues encountered with the VLT5000 drive.

Symptom	Possible Cause	Solution
Drive does not power on	No input power; Blown fuse; Internal fault	Check main power supply; Inspect fuses; Contact service if fault persists.
Motor does not start	No start command; Incorrect parameter settings; Motor fault	Verify start signal; Check parameter 1-00 (Configuration); Inspect motor and connections.
Overcurrent fault	Motor overload; Short circuit in motor/cabling; Incorrect motor data	Reduce load; Check motor and cables for shorts; Verify motor parameters.
Overvoltage fault	High input voltage; Regenerative braking without braking resistor	Check input voltage; Install braking resistor if needed.
Overheat fault	Insufficient ventilation; High ambient temperature; Clogged cooling fins	Ensure proper airflow; Reduce ambient temperature; Clean cooling fins.

For detailed fault codes and advanced troubleshooting, refer to the complete VLT5000 programming guide or contact Danfoss technical support.

7. SPECIFICATIONS

Key technical specifications for the Danfoss VLT5000 Variable Speed Drive, model VLT5006PT5B20SBR3DLF00A00C0.



Figure 7.1: Product label for the Danfoss VLT5000 drive. This label provides critical information including the model number (VLT5006PT5B20SBR3DLF00A00C0), serial number, power ratings (3.7kW / 5HP), input/output voltage and current specifications, maximum ambient temperature (45°C/113°F), and IP20/CHASSIS enclosure rating.

- **Model:** VLT5006PT5B20SBR3DLF00A00C0
- **Power Rating:** 3.7 kW / 5 HP
- **Input Voltage:** 3 x 380-500V AC, 50/60Hz
- **Input Current:** 9.1A
- **Output Voltage:** 3 x 0-Vin
- **Output Frequency:** 0.1-1000Hz
- **Output Current:** 10A - 8.2A
- **Maximum Ambient Temperature:** 45°C (113°F)
- **Enclosure Rating:** IP20 / Chassis
- **Manufacturer:** Danfoss
- **Package Dimensions:** Approximately 20 x 18 x 12 inches

8. WARRANTY INFORMATION

Danfoss products are manufactured to high quality standards. For specific warranty terms and conditions applicable to your VLT5000 drive, please refer to the warranty documentation provided with your purchase or visit the official Danfoss website. Warranty coverage typically includes defects in materials and workmanship under normal use and service.

9. TECHNICAL SUPPORT AND CONTACT

For technical assistance, service, or further information regarding your Danfoss VLT5000 Variable Speed Drive, please contact Danfoss customer support or your authorized Danfoss distributor.

You can find contact information and additional resources on the official Danfoss website:www.danfoss.com

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