SEAFRONT SEAFRONToi9x6g5cus

SEAFRONT Mini VFD Inverter User Manual

Model: SEAFRONToi9x6g5cus

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the SEAFRONT Single-Phase to Three-Phase Variable Frequency Drive (VFD) Controller. This device is designed to convert single-phase power (176-264V) into three-phase power (0-220V) for controlling the speed and torque of various AC motors, fans, and pumps. Please read this manual thoroughly before operating the device to ensure safe and efficient use.

2. Safety Instructions

To prevent personal injury and equipment damage, always observe the following safety precautions:

- Ensure the power supply is disconnected before any wiring or maintenance.
- Only qualified personnel should perform installation and wiring.
- Do not operate the VFD with wet hands or in damp environments.
- Ensure proper grounding of the VFD and the motor.
- Do not touch the terminals immediately after power-off, as residual voltage may be present.
- Protect the VFD from direct sunlight, dust, corrosive gases, and flammable materials.
- Verify input voltage matches the VFD's specifications (1PH 176-264V).

3. Product Features

The SEAFRONT Mini VFD Inverter offers the following key features:

- **Multiple Control Modes:** Supports V/F control, vector control, and output torque control for versatile motor management.
- **High-Quality Components:** Utilizes an excellent copper core coil, ensuring strong resistance, superior performance, and robust load capacity.
- **Compact and Portable Design:** Small size and lightweight construction make it highly flexible, convenient to move, transport, and energy-efficient.
- **Clear LED Digital Display:** Features an intuitive LED digital display panel for clear and convenient reading of operational parameters.
- **Wide Application Range:** Ideal for use with various equipment including motors, fans, pumps, automated machine tools, and engraving machines.

4. Components and Controls

Figure 4.1: Front Panel Overview

This image shows the front panel of the VFD inverter. It features a digital LED display at the top, indicating operational status and values. Below the display are several control buttons: "PROG" (Program), "UP" arrow, "DOWN" arrow, and "OK". At the bottom, there is a rotary knob for frequency adjustment, marked from 0 to 10. Additionally, there are "RUN" and "STOP" buttons for direct motor control, and a "FWD/REV" indicator.

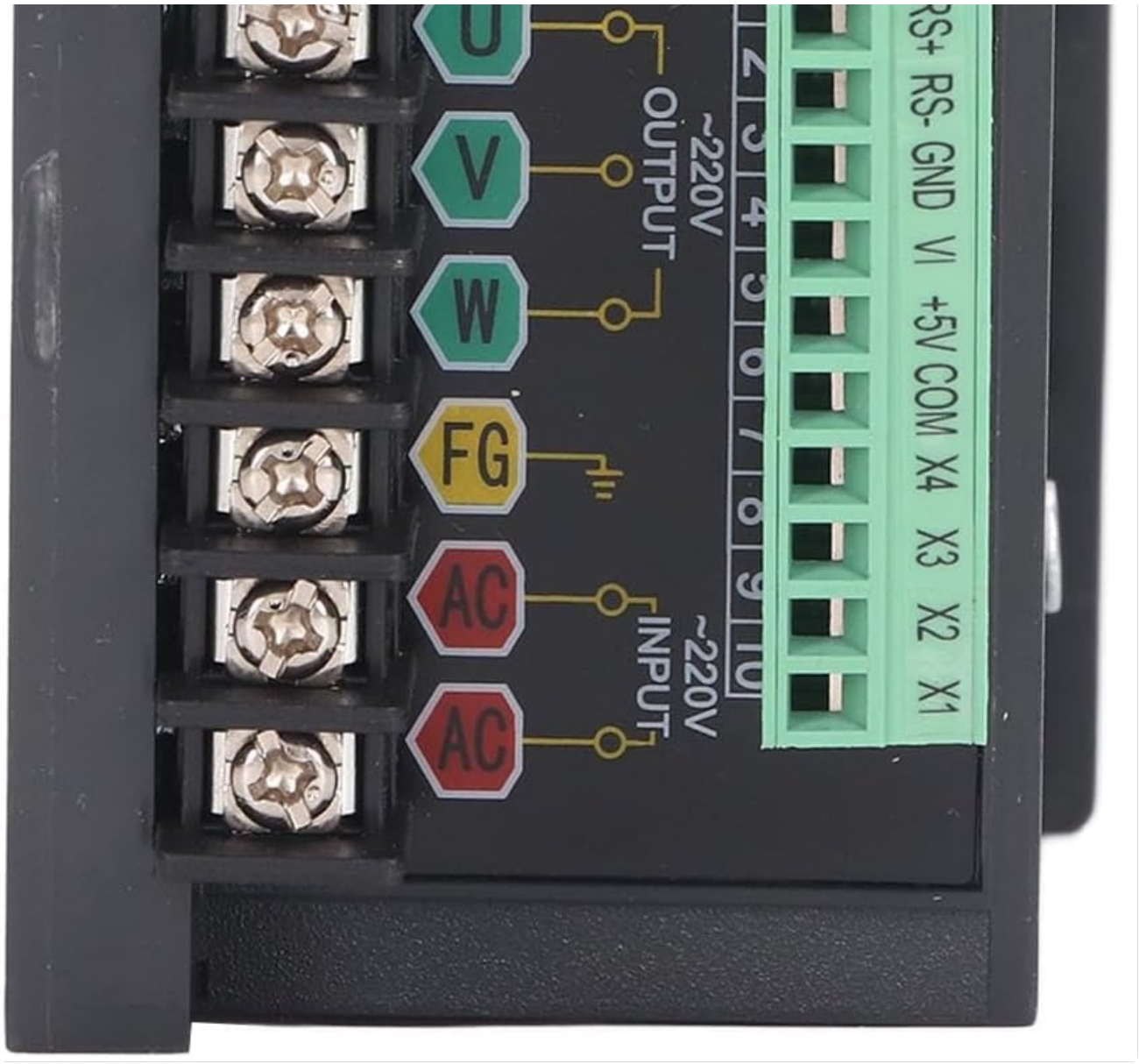

Figure 4.2: Wiring Terminals

This image displays the side of the VFD inverter, highlighting the wiring terminals. On the left, there are terminals labeled "U", "V", "W" for 3-phase output to the motor, and "FG" for frame ground. Below these are two "AC" terminals for single-phase input power (220V). On the right, a green terminal block provides control signal connections, including RS+, RS-, GND, V+, +5V, COM, X1, X2, X3, X4, and X5 for external control and communication.

4.1 Front Panel Controls

- **LED Display:** Shows frequency, current, voltage, and error codes.
- **PROG Button:** Enters/exits parameter setting mode.
- **▲ / ▼ Buttons:** Adjusts parameters or frequency.
- **OK Button:** Confirms selection or parameter setting.
- **RUN Button:** Starts motor operation.
- **STOP Button:** Stops motor operation.
- **Rotary Knob:** Fine-tunes output frequency.

4.2 Terminal Descriptions

Terminal	Description
AC (Input)	Single-phase AC power input (176-264V).

Terminal	Description
U, V, W (Output)	Three-phase AC output to motor (0-220V).
FG	Frame Ground. Connect to earth ground.
RS+, RS-	RS485 communication interface.
GND, V+, +5V, COM	Control power supply and common terminals.
X1, X2, X3, X4, X5	Multi-function input terminals for external control signals.

5. Setup and Installation

5.1 Mounting

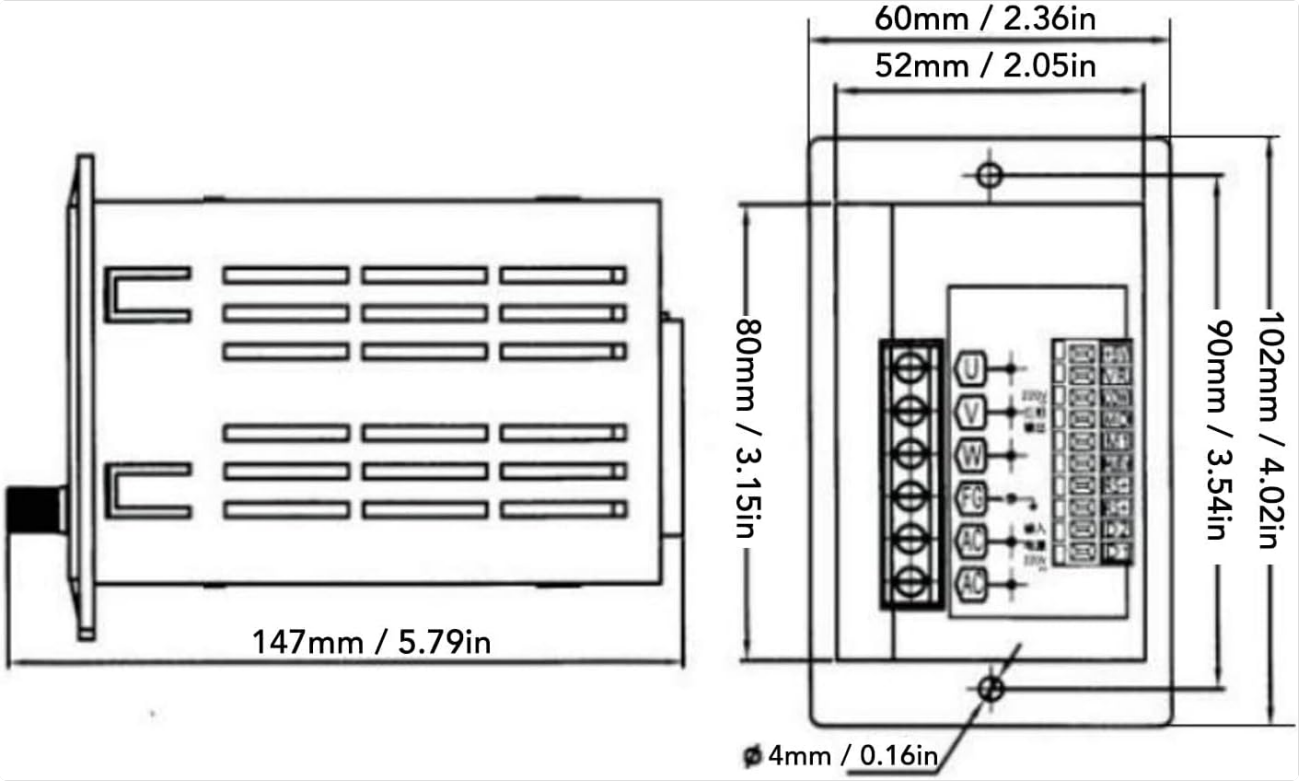

Figure 5.1: Product Dimensions

This diagram provides the physical dimensions of the VFD inverter. The overall length is 147mm (5.79in). The front panel dimensions are 60mm (2.36in) wide and 102mm (4.02in) high, with a mounting hole spacing of 52mm (2.05in) horizontally and 90mm (3.54in) vertically. The depth of the unit is 80mm (3.15in). Mounting holes have a diameter of 4mm (0.16in). Ensure adequate ventilation space around the unit.

Mount the VFD in a well-ventilated area, away from direct heat sources, moisture, and vibrations. Use the provided mounting holes to secure the unit. Ensure sufficient clearance for air circulation, especially around the cooling fan.

5.2 Wiring

Refer to Figure 4.2 for terminal locations. Follow these steps for wiring:

1. **Power Input:** Connect the single-phase AC power supply (176-264V) to the "AC" input terminals. Ensure correct polarity if specified, though for AC, it's typically not critical.

2. **Motor Output:** Connect the three-phase motor's U, V, W terminals to the VFD's "U", "V", "W" output terminals respectively.
3. **Grounding:** Connect the "FG" terminal to a reliable earth ground. This is crucial for safety and to prevent electromagnetic interference.
4. **Control Wiring (Optional):** If using external control (e.g., potentiometer, external switches, PLC), connect them to the appropriate "X" terminals, "GND", "V+", or "COM" as per your application requirements and the VFD's programming parameters.

Important: Double-check all wiring connections before applying power to prevent damage to the VFD or connected equipment.

6. Operating Instructions

6.1 Basic Operation

1. **Power On:** After completing all wiring, apply power to the VFD. The LED display will light up.
2. **Frequency Adjustment:** Use the rotary knob on the front panel to set the desired output frequency. The display will show the current frequency setting.
3. **Start Motor:** Press the **RUN** button to start the motor. The motor will accelerate to the set frequency.
4. **Stop Motor:** Press the **STOP** button to stop the motor. The motor will decelerate and stop.

6.2 Parameter Setting (PROG Mode)

The VFD has various parameters that can be configured to optimize performance for specific applications. Refer to the detailed parameter list in the full product manual (if available) for specific codes and functions.

1. Press the **PROG** button to enter parameter setting mode. The display will show a parameter code (e.g., P001).
2. Use the ▲ and ▼ buttons to navigate through parameter codes.
3. Press the **OK** button to view or edit the value of the selected parameter.
4. Use the ▲ and ▼ buttons to change the parameter value.
5. Press **OK** again to save the new value.
6. Press **PROG** to exit parameter setting mode.

7. Specifications

Parameter	Value
Model Number	SEAFRONToi9x6g5cus
Input Voltage	Single-Phase 176-264V AC
Output Voltage	Three-Phase 0-220V AC
Output Power	400 Watts

Parameter	Value
Output Current	2 Amperes
Frequency	50 Hz (Input)
Efficiency	85% to 98%
Control Modes	V/F Control, Vector Control, Output Torque Control
Display	LED Digital Display
Certification	CE
Dimensions (L x W x H)	Approx. 147mm x 60mm x 102mm (5.79in x 2.36in x 4.02in)
Operating Temperature	(Information not provided in source, typical range is 0-40°C)
Storage Temperature	(Information not provided in source, typical range is -20-60°C)

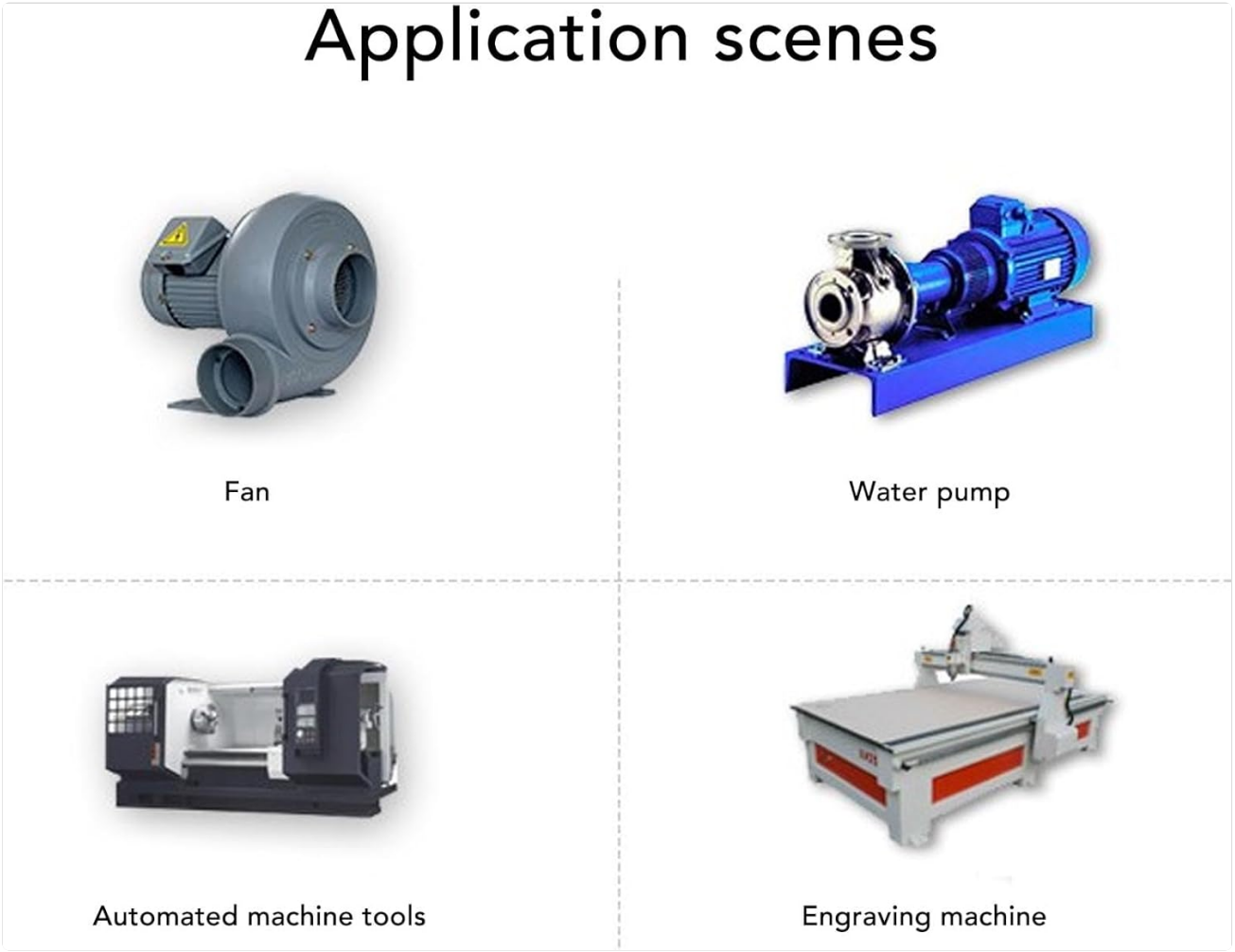

Figure 7.1: Application Scenes

This image illustrates common application scenarios for the VFD inverter. It shows a fan, a water pump, automated machine tools, and an engraving machine, demonstrating the versatility of the VFD in controlling various industrial and commercial equipment.

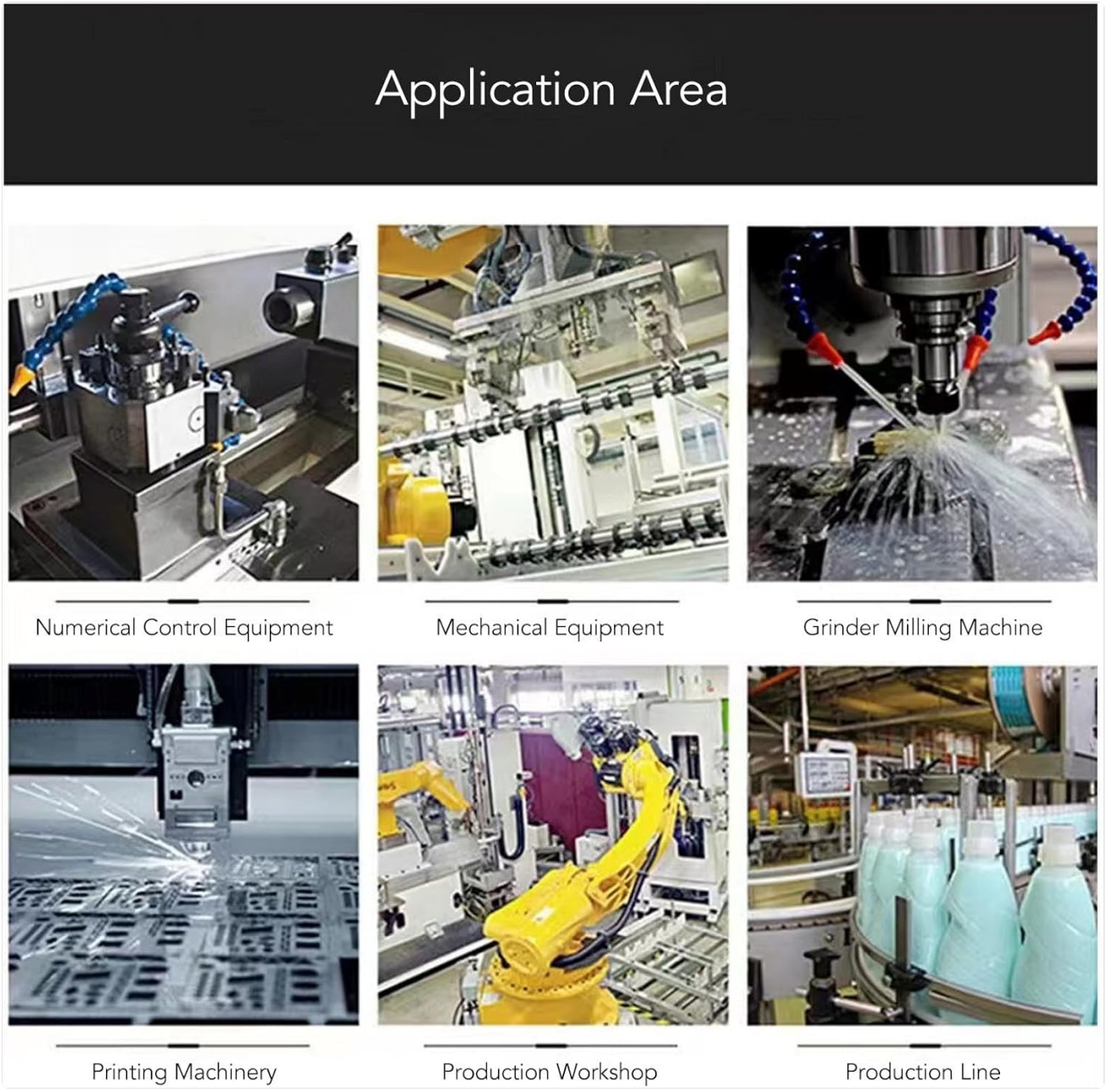

Figure 7.2: Broader Application Areas

This image expands on the application areas, showing the VFD's use in numerical control equipment, general mechanical equipment, grinder milling machines, printing machinery, production workshops, and integrated production lines. This highlights its adaptability across various industrial settings requiring precise motor control.

8. Troubleshooting

If you encounter issues with your VFD, refer to the table below for common problems and solutions. If the problem persists, contact customer support.

Problem	Possible Cause	Solution
No Display / No Power	No input power; incorrect wiring; internal fuse blown.	Check power supply; verify AC input wiring; consult technician for fuse replacement.
Motor Not Running	Incorrect motor wiring (U, V, W); frequency set to 0; motor overload; VFD in fault state.	Check motor connections; increase frequency; reduce load; check for error codes on display.

Problem	Possible Cause	Solution
Overcurrent Fault	Motor short circuit; sudden load change; acceleration time too short.	Check motor and wiring; ensure stable load; increase acceleration time parameter.
Overvoltage Fault	Input voltage too high; deceleration time too short.	Verify input voltage within range; increase deceleration time parameter.
Overheat Fault	Insufficient ventilation; ambient temperature too high; cooling fan blocked.	Ensure proper ventilation; reduce ambient temperature; clean cooling fan.

9. Maintenance

Regular maintenance helps ensure the longevity and optimal performance of your VFD:

- **Cleaning:** Periodically clean the VFD's exterior and ventilation openings to prevent dust accumulation. Use a soft, dry cloth. Do not use liquid cleaners.
- **Inspection:** Regularly inspect wiring connections for looseness or damage. Check for any signs of overheating or discoloration.
- **Environment:** Ensure the operating environment remains within specified temperature and humidity ranges.
- **Storage:** If storing the VFD for an extended period, keep it in a dry, dust-free environment, away from extreme temperatures.

10. Warranty and Support

For technical assistance, warranty claims, or further inquiries, please contact SEAFRONT customer support through your point of purchase or the official SEAFRONT website. Please have your model number (SEAFRONToi9x6g5cus) and purchase details ready when contacting support.