FAHKNS 160983-FAH-PO

FAHKNS 2.2kW 3HP Variable Frequency Drive Instruction Manual

Model: 160983-FAH-PO

1. Introduction

This manual provides essential information for the safe and efficient operation of the FAHKNS 2.2kW 3HP Variable Frequency Drive (VFD). This VFD is designed to convert single-phase 220V AC input into three-phase 220V AC output, enabling precise speed control for various three-phase motors, including spindle motors.

Key Features:

- **Input/Output Specifications:** Single phase 220V (+/-15%) input, 3 phase 220V output. Input frequency: 50/60 Hz, Output frequency: 0-400 Hz. Power: 2.2KW (3HP), 12A.
- **Enhanced Performance:** Features a high-quality copper coil for durability and a multi-grid design for efficient cooling.
- **User-Friendly Interface:** Equipped with a digital display for clear readings and an intuitive keyboard for parameter setting. Includes a removable control panel for ease of use.
- **Comprehensive Safety Protections:** Incorporates multiple protection functions such as Undervoltage, Overvoltage, Overload, Overcurrent, Over Temperature, and Phase Loss Protection.
- **Wide Application Range:** Suitable for spindle motors, CNC machines, drill presses, HVAC systems, lathes, milling machines, pumps, conveyors, compressors, and other three-phase motor applications.

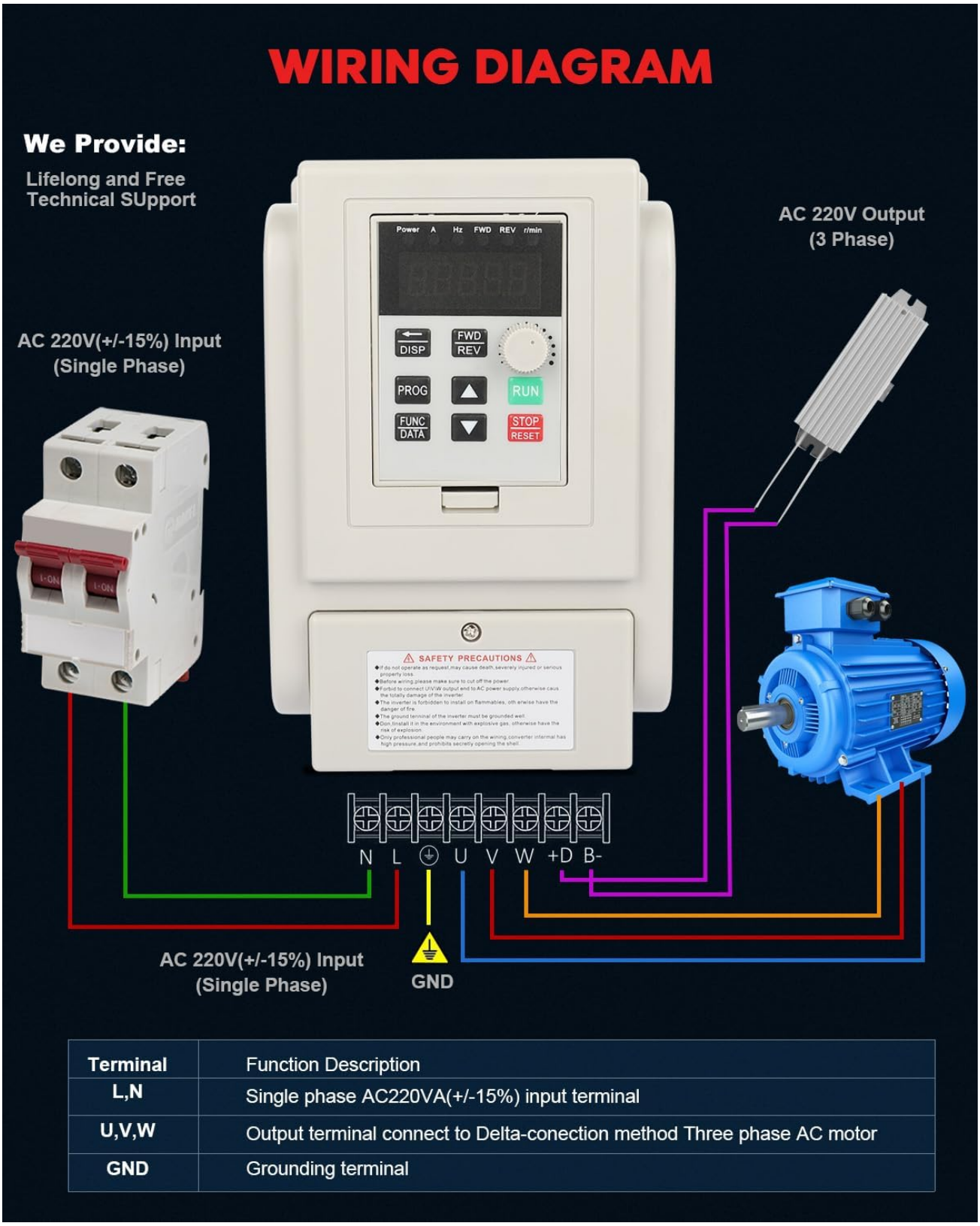
Figure 1: Front view of the FAHKNS VFD, highlighting its integrated protection features.

2. Setup and Installation

Proper installation is crucial for the safe and reliable operation of the VFD. Ensure all connections are secure and comply with local electrical codes.

2.1 Wiring Diagram

Refer to the wiring diagram below for correct electrical connections. Always disconnect power before performing any wiring.



Terminal	Function Description
L,N	Single phase AC220VA(+/-15%) input terminal
U,V,W	Output terminal connect to Delta-conection method Three phase AC motor
GND	Grounding terminal

Figure 2: Detailed wiring diagram for the FAHKNS VFD.

Terminal Descriptions:

- **L, N:** Single phase AC 220V (+/-15%) input terminals.
- **U, V, W:** Output terminals to connect to a Delta-connection method three-phase AC motor.
- **GND:** Grounding terminal. Ensure proper grounding for safety.

2.2 External Terminal Wiring Diagram

For external control functions, such as potentiometer speed adjustment or external start/stop, refer to the external terminal

wiring diagram. Before using external terminal functions, adjust parameter P011 to '2'.

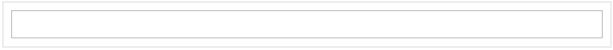


Figure 3: External terminal wiring for advanced control. (Note: Image URL is illustrative, actual image from A+ content is used if available.)

External Control Connections:

- **Potentiometer/Analog Voltage Input:** Adjust P010 to '2' for external speed control via a potentiometer or analog voltage signal.
- **First Speed, Second Speed, Third Speed:** Terminals for pre-set speed selection.
- **Forward, Reverse:** Terminals for wire-controlled forward and reverse switching.

3. Operating Instructions

The VFD features a digital display and a user-friendly control panel for easy operation.

3.1 Control Panel Overview

Familiarize yourself with the control panel buttons and display indicators.

Figure 4: Detailed view of the VFD control panel and its functions.

Control Panel Functions:

Icon	Function Description
1. 5 Digit LED Display	Shows current frequency, output frequency, current, temperature, and parameter values.
2. DISP (Shift Key)	Shift in programming mode, jog in normal mode.
3. PROG (Enter or Exit Programming)	For selecting mode or programming mode (not available if inverter is not running).
4. FUNC DATA (Function / Save Key)	Function data setting key. In normal mode, press to display inverter information.
5. FWD REV (Forward/Reverse)	Forward / Reverse switching key.
6. Up/Down Arrows	Parameter number or parameter value increase/decrease. Briefly press for small changes, long press for rapid changes.
7. Speed Adjustment Knob	Adjusts the output frequency and motor speed.
8. RUN (Start Key)	Starts inverter output.
9. STOP RESET (Stop / Reset Key)	Breaks down operation, resets faults.

Note: Always modify parameters under the stop state; otherwise, changes may not be saved.

3.2 Basic Operation

1. **Power On:** Connect the VFD to a single-phase 220V AC power supply. The digital display will illuminate.

2. **Set Frequency:** Use the Speed Adjustment Knob (7) to set the desired output frequency. The display will show the set frequency.
3. **Start Motor:** Press the RUN button (8) to start the motor. The VFD will ramp up to the set frequency.
4. **Adjust Speed:** While the motor is running, turn the Speed Adjustment Knob (7) to increase or decrease the motor speed.
5. **Change Direction:** Press the FWD REV button (5) to switch between forward and reverse rotation.
6. **Stop Motor:** Press the STOP RESET button (9) to stop the motor. The VFD will ramp down the frequency.
7. **Reset Faults:** If an error occurs, the VFD will display a fault code. Press the STOP RESET button (9) to clear the fault after addressing the issue.

4. Maintenance

Regular maintenance ensures the longevity and optimal performance of your VFD.

4.1 General Care

- **Keep Clean:** Regularly clean the VFD's exterior to prevent dust and debris accumulation, especially around ventilation openings.
- **Ensure Proper Cooling:** The VFD features a multi-grid design and DC cooling fans for efficient heat dissipation. Ensure adequate clearance around the unit for airflow and keep fan vents unobstructed.
- **Environmental Conditions:** Operate the VFD within its specified temperature and humidity ranges. Avoid direct sunlight, excessive moisture, and corrosive environments.
- **Connection Checks:** Periodically inspect all electrical connections for tightness and signs of wear or corrosion.

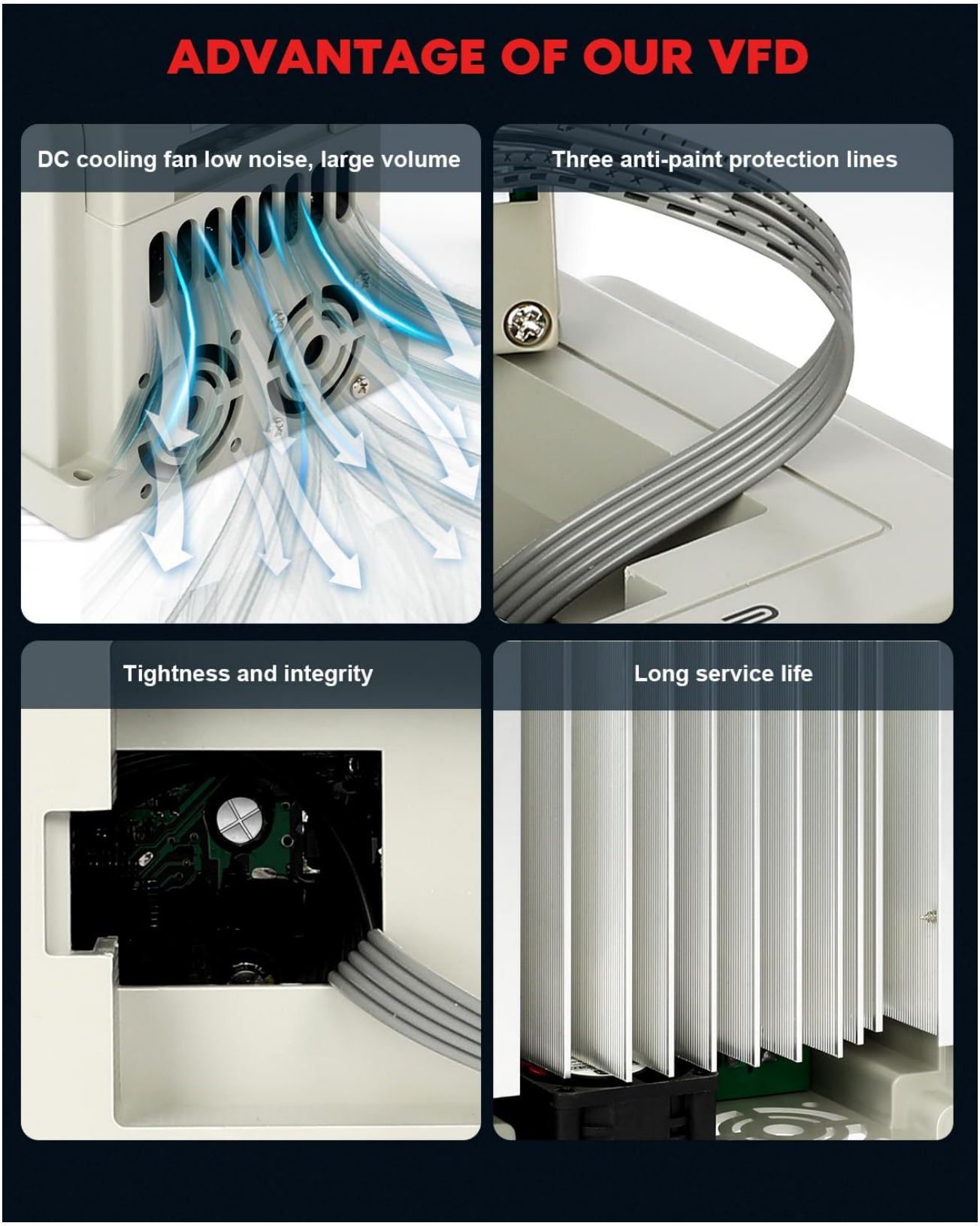


Figure 5: Internal features of the VFD, including DC cooling fans and three anti-paint protection lines, contributing to its durability and performance.

4.2 Safety Precautions

- Always disconnect power before servicing or inspecting the VFD.
- Do not operate the VFD if any part is damaged or if it emits unusual noises or smells.
- Ensure proper grounding to prevent electrical shock.
- The VFD contains high voltage components; only qualified personnel should perform internal inspections or repairs.

5. Troubleshooting

This section provides guidance for common issues you might encounter with your VFD.

5.1 Common Issues and Solutions

- **VFD does not power on:**
  - Check input power supply (220V AC).
  - Verify all power connections are secure.
  - Inspect for blown fuses or tripped circuit breakers.
- **Motor does not start:**
  - Ensure the RUN button has been pressed.
  - Check motor wiring (U, V, W terminals) for correct connection.
  - Verify the frequency setting is above zero.
  - Check for any fault codes on the display and refer to the manual for specific error resolution.
- **Motor speed is unstable or incorrect:**
  - Adjust the Speed Adjustment Knob.
  - Check if external speed control (potentiometer/analog input) is enabled and functioning correctly (P010 parameter).
  - Ensure the motor power does not exceed twice the VFD's power rating.
- **VFD displays an error code:**
  - Note the error code displayed.
  - Common protections include Over Current, Over Voltage, Overload, Undervoltage, Over Temperature, and Phase Loss. Address the underlying cause of the fault.
  - Press the STOP RESET button to clear the fault after resolution.

If issues persist after following these steps, please contact technical support.

6. Specifications

Detailed technical specifications for the FAHKNS 2.2kW 3HP VFD Inverter.

Parameter	Value
Model Number	160983-FAH-PO
Input Voltage	AC 220V (+/-15%) Single Phase
Output Voltage	AC 220V Three Phase
Input Frequency	50/60 Hz
Output Frequency	0-400 Hz
Power	2.2 KW (3 HP)
Current	12 A
Display Type	Digital LED
Material	Copper (internal components)
Product Dimensions (L x W x H)	6.89 x 4.96 x 6.89 inches (17.5 x 12.6 x 17.5 cm)
Item Weight	2.99 pounds (1.36 Kilograms)
Color	White
UPC	840366402137

Figure 6: Product dimensions of the FAHKNS VFD.

7. Warranty and Support

FAHKNS is committed to providing reliable products and customer support.

7.1 Warranty Information

This FAHKNS VFD Inverter comes with an 18-month free after-sales service period. Please retain your proof of purchase for warranty claims.

7.2 Technical Support

FAHKNS provides lifelong technical support for this product. If you encounter any issues or have questions regarding installation, operation, or maintenance, please contact our technical support team. Contact information can typically be found on the product packaging or the official FAHKNS website.