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Robodo FST-810-750W-RS485

Robodo FST-810-750W-RS485 Variable Frequency Drive User Manual

Model: FST-810-750W-RS485

1. Introduction

This manual provides essential information for the safe and efficient operation of your Robodo FST-810-750W-RS485 Variable Frequency Drive (VFD). The FST-810-750W-RS485 is a compact, intelligent VFD designed for single-phase 220V AC motors up to 0.75 kW (1 HP). It features advanced vector control, energy-efficient operation, and reliable RS-485 (MODBUS protocol) communication support. Please read this manual thoroughly before installation, operation, or maintenance to ensure proper use and to prevent damage or injury.

2. Safety Information

Always observe the following safety precautions to prevent electric shock, fire, personal injury, or equipment damage.

- **Electrical Safety:** Only qualified personnel should install, operate, and maintain this VFD. Disconnect all power sources before performing any work on the VFD or connected equipment. Wait for the VFD's charge indicator to extinguish before touching any components.
- **Grounding:** Ensure the VFD is properly grounded according to local electrical codes and regulations.
- **Environment:** Install the VFD in a clean, dry, well-ventilated area, free from direct sunlight, corrosive gases, flammable materials, and excessive vibration.
- **Overload Protection:** Do not exceed the rated current or power of the VFD. Ensure the motor is correctly matched to the VFD's specifications.
- **Emergency Stop:** Implement an external emergency stop circuit independent of the VFD's control system.

3. Product Overview

3.1 Key Features

- **Rated Power:** 0.75 kW / 1 HP
- **Input Voltage:** Single-Phase 220V AC ±10%, 50/60 Hz

- **Output Frequency:** Adjustable from 0.1 – 400 Hz
- **Control Mode:** V/F and Vector Control with high-speed DSP processor
- **Communication:** Built-in RS-485 Port (MODBUS-RTU / ASCII)
- **Protection:** Over-voltage, under-voltage, over-current, over-temperature
- **Design:** Compact, fan-cooled IP20 housing with digital display and keypad

3.2 Component Identification

The FST-810-750W-RS485 VFD features a user-friendly front panel for control and monitoring, along with clearly labeled terminals for power and communication connections.



Figure 1: Front view of the Robodo FST-810-750W-RS485 Variable Frequency Drive, showing the digital display, control buttons, and speed adjustment knob.



Figure 2: Detailed analysis of the VFD's control panel, highlighting the digital display, indicator lights, function buttons (P-K, SHIFT, MENU, ESC, SAVE, LOCK, FWD, REV), ON/OFF button, speed adjustment knob, and terminal connections.

The front panel includes a four-digit display, power/positive/reverse indicator lights, and various control buttons for parameter adjustment and operation. A rotary potentiometer allows for manual speed regulation.

4. Setup and Installation

4.1 Mounting

The VFD is designed for wall or panel mounting and requires vertical installation to ensure proper cooling. Maintain adequate clearance around the unit for ventilation.

power	750W
Model	FST-501
Output current	4.2A
Input voltage	1-phase AC 200V-240V
Output voltage	3-phase AC 0-240V
Input frequency	50HZ/60HZ
Output frequency	0-300HZ



Figure 3: Dimensional drawing of the VFD, showing approximate measurements (W×H×D) for installation planning.

4.2 Wiring

Ensure all power is disconnected before wiring. Connect the input power, motor, and communication lines to the appropriate terminals as shown below. Use appropriate wire gauges for the rated current.



Figure 4: Rear view of the VFD showing the main power input (AC), motor output (U, V, W for 3-phase motor, or connect to two terminals for single-phase motor with capacitor), ground (FG), and RS485 communication terminals (RS+, RS-).

- **Input Power (AC):** Connect the single-phase 220V AC power supply to the designated input terminals.
- **Motor Output (U, V, W):** Connect the motor leads to the output terminals. For single-phase motors, consult the motor's wiring diagram for proper connection, often involving two VFD output terminals and a capacitor.
- **Ground (FG):** Connect the VFD to a reliable earth ground.
- **RS-485 Communication (RS+, RS-):** For MODBUS communication, connect the RS-485 lines to the

respective terminals.

- **Control Terminals:** Additional terminals (e.g., +10V, VR, COM, M0, M1, M2, D1, D2) are available for external control signals, such as analog speed reference or digital inputs. Refer to the detailed wiring diagram in the included PDF manual for specific functions.

5. Operating Instructions

5.1 Basic Operation

1. **Power On:** After ensuring all wiring is correct and secure, apply power to the VFD. The digital display will illuminate.
2. **Speed Adjustment:** Use the rotary potentiometer on the front panel to adjust the motor speed. Turning clockwise increases speed, counter-clockwise decreases speed.
3. **Start/Stop:** Press the **ON/OFF** button to start or stop the motor. The FWD/REV indicators will show the direction of rotation.
4. **Direction Change:** Use the **FWD** and **REV** buttons to change the motor's rotation direction.

5.2 Parameter Settings

The VFD allows for detailed parameter configuration via the front panel buttons. Refer to the comprehensive parameter list in the included PDF manual for specific settings.

- **P-K (Parameter Key):** Enters/exits parameter setting mode.
- **SHIFT:** Shifts the cursor position during parameter value entry.
- **MENU/ESC:** Navigates through menus or exits the current setting without saving.
- **SAVE/LOCK:** Saves the current parameter setting or locks the keypad.
- **Up/Down Arrows:** Adjust parameter values.

5.3 Control Modes

The VFD supports V/F (Voltage/Frequency) control and Vector Control. Vector control offers higher precision and torque control, especially at low speeds. The specific control mode can be selected and configured through the parameter settings.

6. Maintenance

Regular maintenance ensures the longevity and reliable operation of your VFD.

- **Cleaning:** Periodically clean the VFD's exterior and ventilation openings to prevent dust accumulation, which can hinder cooling. Use a soft, dry cloth. Do not use liquid cleaners.
- **Ventilation:** Ensure that the cooling fan is operating correctly and that airflow is not obstructed.
- **Connections:** Periodically check all electrical connections for tightness. Loose connections can cause overheating or intermittent operation.
- **Environmental Check:** Verify that the operating environment remains within the specified temperature and humidity ranges.

7. Troubleshooting

The VFD is equipped with various protection features. If an error occurs, the display will typically show an error

code. Refer to the included PDF manual for a complete list of error codes and their remedies. Common issues and general solutions are listed below:

- **Over-voltage/Under-voltage:** Check the input power supply voltage. Ensure it is within the specified range (220V AC ±10%).
- **Over-current:** This can be caused by motor overload, short circuits in the motor wiring, or incorrect acceleration/deceleration times. Check motor load, wiring, and adjust VFD parameters.
- **Over-temperature:** Indicates insufficient cooling. Check for blocked ventilation, a faulty cooling fan, or high ambient temperature.
- **No Output/Motor Not Running:** Verify input power, motor connections, and ensure the VFD is in run mode (ON/OFF button pressed, FWD/REV indicators active). Check for any active fault codes.

If the problem persists after attempting basic troubleshooting, contact technical support.

8. Technical Specifications

Specification	Value
Model	FST-810-750W-RS485
Rated Output Power	0.75 kW (1 HP)
Rated Output Current	4.2 A
Input Voltage	Single-Phase 220V AC ±10%
Input Frequency	50/60 Hz
Output Frequency	0.1 – 400 Hz
Control Method	SPWM / V/F / Vector Control
Communication	RS-485, MODBUS-RTU / ASCII
Overload Capacity	150% rated current for 1 minute
Carrier Frequency	1 – 15 kHz (adjustable)
Cooling Type	Forced air cooling
Protection Level	IP20
Dimensions (W×H×D)	Approx. 82 × 150 × 120 mm
Weight	1.2 kg (Product Weight: 850 g)
Mounting Type	Wall or panel mount, vertical installation
Included Components	FST-810-750W-RS485 VFD Inverter, User Manual (PDF)

9. Warranty and Support

For detailed warranty information, please refer to the documentation provided at the time of purchase or contact Robodo customer service. A comprehensive user manual in PDF format is included with your purchase, which contains detailed wiring diagrams, parameter lists, and advanced troubleshooting guides.

For further assistance or technical support, please visit the officialRobodo Store on Amazon or contact your local distributor.

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