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Teco-Westinghouse E510-205-H3-U

Teco-Westinghouse E510-205-H3-U E510 VFD

INSTRUCTION MANUAL

Model: E510-205-H3-U

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of the Teco-Westinghouse E510-205-H3-U Variable Frequency Drive (VFD). The E510 series VFD is designed to control the speed of three-phase AC induction motors, offering advanced features for various industrial applications. Please read this manual thoroughly before attempting to install or operate the unit.

2. Safety Information

WARNING: Improper installation or operation of this equipment can result in serious injury or death, and damage to the equipment. Only qualified personnel should perform installation, wiring, and maintenance procedures.

- Always disconnect all power sources before working on the VFD or motor. Wait for the DC bus capacitors to discharge completely (verify with a voltmeter).
- Ensure proper grounding of the VFD and motor according to local and national electrical codes.
- Protect the VFD from moisture, dust, and corrosive environments.
- Do not operate the VFD with damaged cables or components.
- Wear appropriate personal protective equipment (PPE) when working with electrical equipment.
- The VFD contains high voltage even after power is disconnected. Allow sufficient discharge time.

3. Package Contents

Upon unpacking, verify that all items are present and undamaged. If any items are missing or damaged, contact your supplier immediately.

- Teco-Westinghouse E510-205-H3-U VFD Unit
- Instruction Manual (this document)
- Mounting Hardware (if applicable)

4. Product Features

The E510-205-H3-U VFD offers a robust set of features designed for precise motor control and system integration:

- **Power Range:**
 - 230V, 1-phase (0.5 to 3 HP)
 - 230V, 3-phase (1 to 15 HP)
 - 460V, 3-phase (1 to 25 HP)
- Parameters grouped by function for intuitive programming.
- Built-in PLC Functionality for custom control logic.
- PID Process Control Loop with Sleep Mode for energy efficiency.
- Flexible Feedback Options: 0-10VDC or 4-20mA, with loss of feedback or tracking detection.
- Built-in Modbus Protocol (RJ45 Interface) for communication.
- 5-Digit Operator's Keypad with Scalable Display for easy monitoring and programming.
- Comprehensive Diagnostics monitoring.
- Built-in Disconnect and Speed Potentiometer on selected models.
- Digital and Analog Inputs and Outputs with extremely fast 4 msec update time.
- Auto Run Mode for cyclic operation.
- Power Loss Ride Through capability.
- Automatic Voltage Regulation (AVR) to stabilize output voltage against fluctuating input voltage.



Figure 1: Front view of the Teco-Westinghouse E510 Variable Frequency Drive, showing the operator keypad and display.

5. Setup and Installation

Installation should only be performed by qualified electricians in accordance with all applicable electrical codes and standards.

1. **Mounting:** Mount the VFD vertically on a flat, non-combustible surface in an area with adequate ventilation. Ensure sufficient clearance around the unit for cooling.
2. **Power Wiring:** Connect the incoming three-phase 230VAC power supply to the designated input terminals (R/L1, S/L2, T/L3). Ensure correct wire sizing and overcurrent protection.
3. **Motor Wiring:** Connect the motor leads to the VFD output terminals (U/T1, V/T2, W/T3). Verify that the motor's voltage and current ratings are compatible with the VFD.
4. **Grounding:** Connect the VFD's ground terminal to a reliable earth ground.
5. **Control Wiring:** Connect control signals (e.g., start/stop, speed reference, fault contacts) to the appropriate digital and analog input/output terminals as required by your application. Refer to the wiring diagrams in the full technical manual for detailed connections.
6. **Initial Power-Up:** After all connections are secure and verified, apply power to the VFD. Observe the display for any fault codes.

6. Operating Instructions

The E510 VFD can be operated via its integrated keypad, external control terminals, or serial communication (Modbus).

6.1. Keypad Operation

- **Display:** The 5-digit display shows operational status, frequency, current, voltage, and parameter values.
- **RUN/STOP Buttons:** Used to start and stop the motor.
- **UP/DOWN Arrows:** Used to adjust speed reference or navigate through parameters.
- **PROG/DATA Button:** Enters/exits parameter programming mode and confirms data entry.
- **SHIFT/RESET Button:** Used to shift digits during parameter entry or reset fault conditions.

6.2. Basic Parameter Setting

To set basic parameters such as maximum frequency, acceleration/deceleration times, and motor data, refer to the detailed parameter list in the complete E510 user manual. Access parameters by pressing the PROG/DATA button and navigating with the UP/DOWN arrows.

7. Maintenance

Regular maintenance ensures optimal performance and extends the lifespan of your VFD. Always disconnect power before performing any maintenance.

- **Cleaning:** Periodically clean the VFD's heatsink and cooling fans to prevent dust accumulation, which can impede heat dissipation. Use compressed air or a soft brush.
- **Inspection:** Regularly inspect wiring connections for tightness and signs of wear or damage. Check for any discoloration or unusual odors.
- **Environmental Check:** Ensure the operating environment remains within specified temperature and humidity ranges.
- **Capacitor Life:** Electrolytic capacitors have a finite lifespan. Consider professional inspection or replacement after several years of continuous operation.

8. Troubleshooting

If the VFD encounters an issue, it will typically display a fault code. Refer to the full technical manual for a comprehensive list of fault codes and their remedies. Below are common issues and general solutions:

Symptom/Fault Code	Possible Cause	Solution
OV (Overvoltage)	Regenerative energy from motor, high input voltage.	Increase deceleration time, install braking resistor, check input voltage.
OC (Overcurrent)	Motor overload, short circuit, rapid acceleration.	Check motor load, inspect motor/cables, increase acceleration time.
OL (Overload)	Motor running above rated current for extended period.	Reduce motor load, check motor parameters, verify motor cooling.
GF (Ground Fault)	Leakage current to ground.	Inspect motor and output cables for insulation damage.
No Display	No power, internal fault.	Check input power supply, fuses. If power is present, contact support.

9. Specifications

- **Manufacturer:** Teco-Westinghouse
- **Model:** E510-205-H3-U
- **Input Voltage:** 230VAC Three Phase
- **Enclosure Rating:** NEMA 1
- **Power Range:** 0.5 to 25 HP (depending on voltage and phase configuration)
- **Item Weight:** 5.5 pounds
- **Material:** Other (as specified by manufacturer)
- **ASIN:** B07HCGKKNJ
- **First Available:** September 17, 2018

10. Warranty and Support

For warranty information, technical support, or service inquiries, please contact Teco-Westinghouse directly or your authorized distributor. Keep your purchase receipt and product serial number handy when contacting support. Visit the [Teco-Westinghouse Store](#) for more product information.