MITSUBISHI FR-D740-036-NA

MITSUBISHI FR-D740-036-NA FR-D700 Series Inverter Drive Instruction Manual

Model: FR-D740-036-NA

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of the MITSUBISHI FR-D740-036-NA FR-D700 Series Inverter Drive. This device is a three-phase inverter designed for motor speed control applications, rated at 2 HP, 3.6 AMP, and 400 V. Please read this manual thoroughly before attempting to install or operate the unit.

2. Safety Information

DANGER: Improper handling can lead to serious injury or death. Ensure all power is disconnected before installation or maintenance. Only qualified personnel should perform electrical work.
CAUTION: Failure to follow instructions may result in minor injury or equipment damage. Observe all warnings and instructions provided in this manual and on the product labels.

- Do not operate the inverter with wet hands.
- Do not touch internal components immediately after power-off, as residual voltage may be present.
- Ensure proper grounding of the inverter.
- Install the inverter in an environment free from excessive dust, moisture, corrosive gases, or direct sunlight.

3. Product Overview

The MITSUBISHI FR-D740-036-NA is a compact and versatile inverter drive from the FR-D700 series, designed for various industrial applications requiring precise motor speed control. It features an integrated control panel for easy operation and monitoring.

Figure 3.1: Front view of the MITSUBISHI FR-D740-036-NA Inverter Drive. The image displays the dark gray unit with the MITSUBISHI logo at the top left, an LED display, and a control panel featuring a rotary dial, 'RUN', 'STOP/RESET', 'MODE', 'SET', and 'PU/EXT' buttons. Ventilation grilles are visible on the right side. The unit is labeled 'D700' and '3φ 400V'.

3.1. Key Components

- **Control Panel:** Features an LED display, rotary dial, and push buttons for parameter setting and operation.
- **Power Terminals:** For connecting input power and motor output.
- **Control Terminals:** For external control signals.
- **Heat Sink/Ventilation:** Designed for efficient heat dissipation.

4. Setup and Installation

4.1. Mounting

Mount the inverter vertically on a flat, non-flammable surface. Ensure adequate clearance around the unit for proper ventilation (at least 50mm above and below, and 10mm on sides).

4.2. Wiring

1. **Power Input (R/L1, S/L2, T/L3):** Connect the three-phase 400V AC power supply.
2. **Motor Output (U, V, W):** Connect to the motor terminals.
3. **Grounding (E/PE):** Ensure the inverter is properly grounded to prevent electrical shock and noise.
4. **Control Circuit Wiring:** Connect external control signals (e.g., start/stop, speed reference) to the control terminals as per your application requirements. Refer to the detailed wiring diagrams in the full technical manual for specific terminal assignments.

Note: Use appropriate wire gauges and ensure all connections are secure to prevent loose contacts and potential hazards.

5. Operating Instructions

5.1. Initial Power-Up

After completing wiring, apply power to the inverter. The LED display will illuminate, typically showing the current frequency or a status code.

5.2. Basic Operation via Control Panel

- **RUN Button:** Press to start the motor.
- **STOP/RESET Button:** Press to stop the motor or reset an alarm.
- **MODE Button:** Cycles through display modes (e.g., output frequency, output current, output voltage).
- **SET Button:** Used to enter parameter setting mode or confirm a setting.
- **Rotary Dial:** Adjusts frequency reference or parameter values.
- **PU/EXT Button:** Toggles between PU (Panel Unit) operation and EXT (External) control.

5.3. Parameter Setting

To adjust operating parameters (e.g., maximum frequency, acceleration/deceleration time):

1. Press the **MODE** button until the desired parameter group is displayed.
2. Press the **SET** button to enter parameter setting mode.
3. Use the **Rotary Dial** to select the specific parameter number.
4. Press **SET** again to view the current value.
5. Use the **Rotary Dial** to change the value.
6. Press **SET** to save the new value.
7. Press **MODE** to exit parameter setting.

Refer to the MITSUBISHI FR-D700 Series technical manual for a complete list of parameters and their functions.

6. Maintenance

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

6.1. Daily Checks

- Check for abnormal noises or vibrations.
- Monitor the display for error codes.
- Ensure cooling fan is operating correctly and not obstructed.

6.2. Periodic Checks (Monthly/Quarterly)

- Clean dust and debris from the heat sink and ventilation openings.
- Inspect wiring for signs of damage, loose connections, or discoloration.
- Check terminal screws for tightness.
- Verify environmental conditions (temperature, humidity).

6.3. Component Replacement

Components such as cooling fans and capacitors have a finite lifespan. Refer to the technical manual for recommended replacement intervals. Replacement should only be performed by qualified service personnel.

7. Troubleshooting

This section outlines common issues and their potential solutions. For detailed error codes and advanced troubleshooting, consult the comprehensive MITSUBISHI FR-D700 Series technical manual.

Symptom/Error Code	Possible Cause	Corrective Action
No display/No power	No input power; Blown fuse; Faulty wiring.	Check power supply; Inspect fuses; Verify wiring connections.
Motor does not run	Stop command active; Incorrect frequency setting; Motor wiring error.	Check control signals; Adjust frequency; Verify motor connections (U, V, W).
Overcurrent alarm (E.OC1, E.OC2, E.OC3)	Sudden load change; Short circuit in motor/wiring; Inverter capacity too small.	Check load conditions; Inspect motor/wiring; Ensure inverter matches motor requirements.
Overvoltage alarm (E.OV1, E.OV2)	Regenerative energy from motor; High input voltage.	Increase deceleration time; Install braking resistor if necessary; Check input voltage.

8. Specifications

The following are key specifications for the MITSUBISHI FR-D740-036-NA Inverter Drive:

- **Model:** FR-D740-036-NA
- **Series:** FR-D700 Series
- **Rated Motor Output:** 2 HP (1.5 kW)
- **Rated Output Current:** 3.6 AMP
- **Input Voltage:** Three-Phase, 400 V AC (380-480V)
- **Output Voltage:** Three-Phase, 400 V AC (proportional to input voltage)
- **Output Frequency Range:** 0.2 to 400 Hz
- **Control Method:** Soft-PWM control, V/F control, General-purpose magnetic flux vector control
- **Dimensions (Approx.):** 9 x 7 x 9 inches
- **Weight (Approx.):** 4 Pounds
- **Environmental Conditions:**
  - Operating Temperature: -10°C to +50°C (14°F to 122°F)
  - Storage Temperature: -20°C to +65°C ((-4°F to 149°F)
  - Humidity: 90% RH or less (non-condensing)
- **Applicable Standards:** US/CA/MX Specification

9. Warranty and Support

9.1. Warranty Information

MITSUBISHI Electric products are typically covered by a standard manufacturer's warranty against defects in materials

and workmanship. The specific terms and duration of the warranty may vary by region and product. Please refer to the warranty documentation provided with your purchase or contact your local MITSUBISHI Electric representative for details.

9.2. Technical Support

For technical assistance, troubleshooting beyond this manual, or service inquiries, please contact your authorized MITSUBISHI Electric distributor or visit the official MITSUBISHI Electric website for support resources and contact information.

Online Resources: www.mitsubishielectric.com