



PowerFlex 400 Frames D-H Replacement Procedure for Main Control Board

Contents

This publication provides instructions for replacing the main control board for PowerFlex 400 Frames D through H drives. For additional drive information, refer to the PowerFlex 400 User Manual, publication 22C-UM001....

What This Kit Contains

- Main control board assembly consisting of a main control board, an LCD Human Interface Module (HIM), and a plastic tray
- Four spare tapping $\phi 4 \times 8$ mm screws (for Frame D) and four spare M4*8 mm screws (for Frames E-H) to be used for the plastic tray
- This publication

Safety Precautions

The following general precautions apply to the PowerFlex 400 drive.



ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Wait five minutes for the capacitors to discharge. Then, measure the DC bus voltage at the DC- and DC+ terminals or at the DC- and P2 terminals on the power terminal block. The voltage must be zero. A darkened LCD display and LEDs are not an indication that capacitors have discharged to safe voltage levels.



Only qualified electrical personnel familiar with the construction and operation of this equipment and hazards involved should install, start and/or adjust this equipment. Read and understand these instructions in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.



ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference A-B publication 8000-4.5.2, "Guarding Against Electrostatic Damage" or any other applicable ESD protection handbook.



What You Need

- A #1 Phillips screwdriver, preferably an adjustable torque driver capable of 0.9 to 2.9 N-m (8.0...25.7 lb.-in).

Replacement Procedure

The replacement procedure for the main control board is described in the following sections:

- [Recording Parameter Settings from the Main Control Board on page 2](#)
- [Removing and Locking Out Power on page 4](#)
- [Opening the Drive on page 4](#)
- [Replacing the Main Control Board on page 7](#)
- [Putting the Drive Back Together on page 9](#)
- [Programming the Parameters for the Main Control Board on page 10](#)

Recording Parameter Settings from the Main Control Board

Before removing the old main control board, you need to record the parameters and their values from it.

Recording user parameters

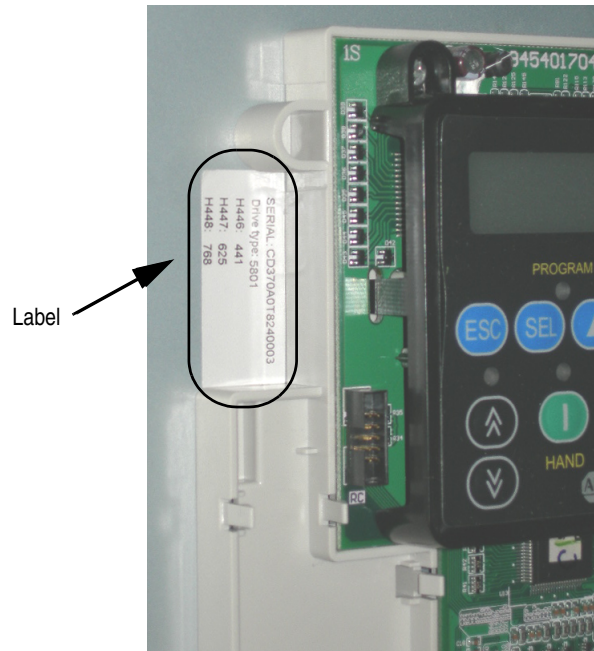
1. Power up the drive.
2. Use DriveExplorer or the 22-HIM CopyCat feature to copy all the user parameters from the old main control board.
3. Save the user parameters into a file.

You may download this file onto the new main control board after it is installed.

Recording hidden parameters

Check to see if there is a label next to the keypad on the control board. The label lists these parameters:

- d321 [DriveType]
- H446
- H447
- H448



If your drive has this label, record the values on the label.

Otherwise, follow this procedure to record the values from the drive.

1. Go to parameter A196.

The default value of A196 is 0400.

2. Enter a value of 7625 (Hex) for A196.

The hidden parameter group H appears.

3. Record the values in the hidden parameters H418, H446, H447, and H448.

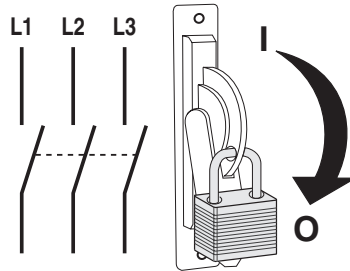
4. Reset the value of A196 to 0400.

If the label is not present, and the main control board cannot communicate with the keypad or DriveExplorer, please contact Rockwell Automation Drives Technical Support.

Removing and Locking Out Power

If the drive is in service, do the following.

1. Turn off and lock out all incoming power to the drive. Wait five minutes.



2. Verify that there is no voltage at the input power terminals.

Opening the Drive

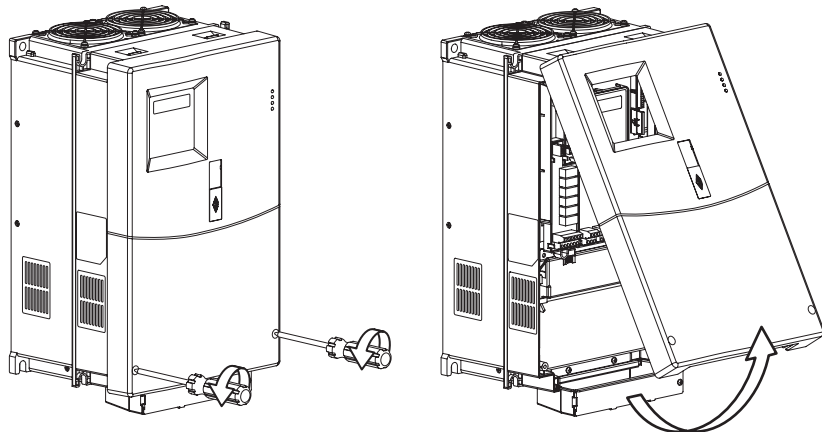


ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Wait five minutes for the capacitors to discharge. Then, measure the DC bus voltage at the DC- and DC+ terminals or at the DC- and P2 terminals on the power terminal block. The voltage must be zero.

A darkened LCD display and LEDs are not an indication that capacitors have discharged to safe voltage levels.

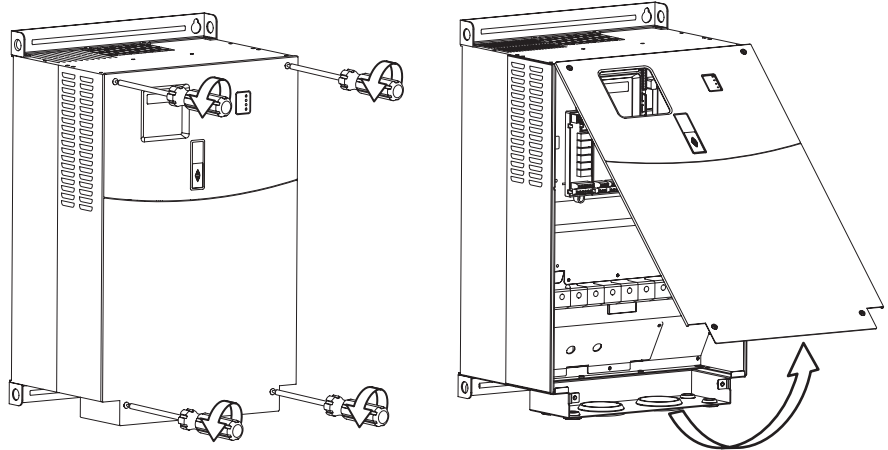
Frame D Drives

1. Loosen the two captive cover screws.
2. Pull the bottom of the cover out and up to release.



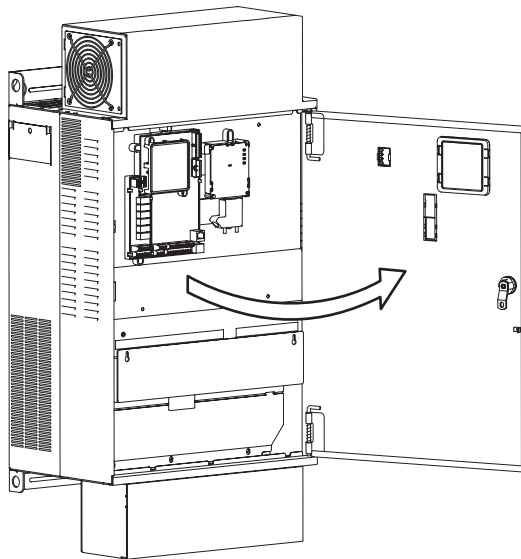
Frame E Drives

1. Loosen the four captive cover screws.
2. Pull the bottom of the cover out and up to release.



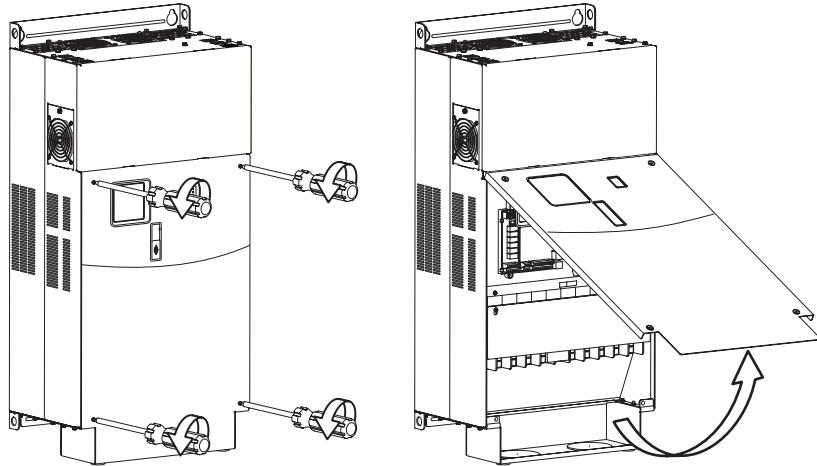
Frame F Drives

1. Turn the latch counterclockwise.
2. Pull on the latch to swing the door open.



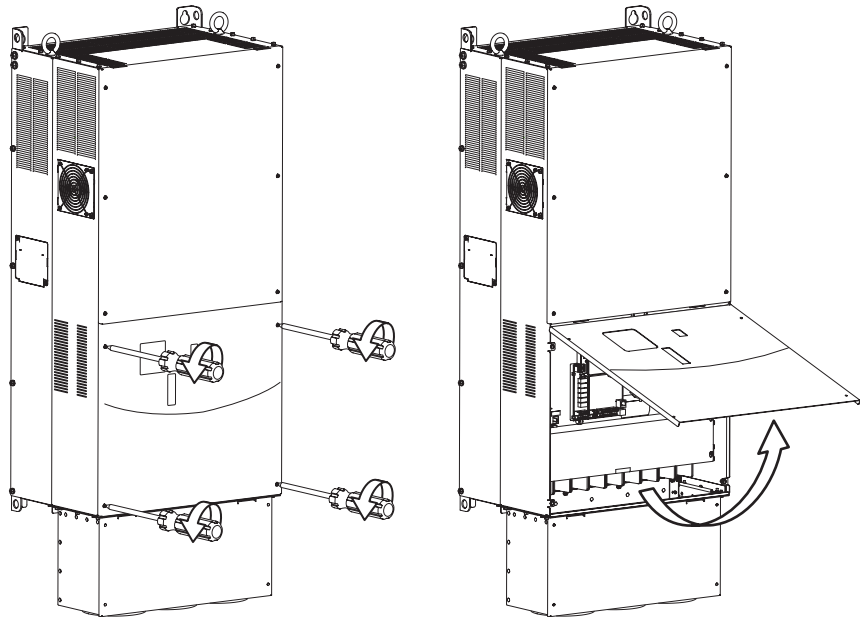
Frame G Drives

1. Loosen the four captive cover screws.
2. Pull the bottom of the cover out and up to release.



Frame H Drives

1. Loosen the four captive cover screws.
2. Pull the bottom of the cover out and up to release.



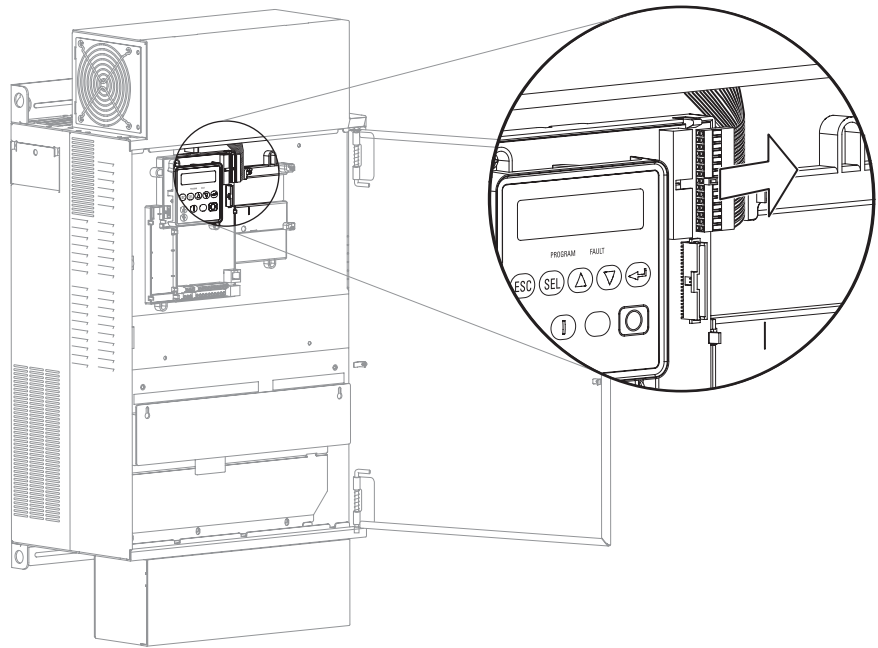
Replacing the Main Control Board

The following procedure shows you how to replace the main control board from a PowerFlex 400 Frame F drive. The procedure is the same for drives of other frame sizes.

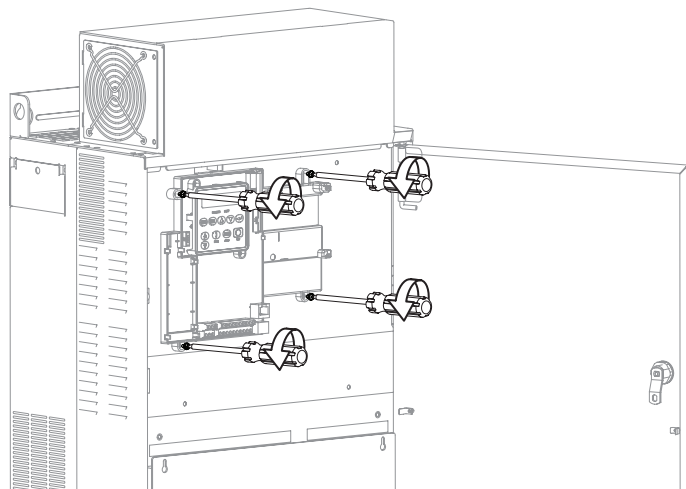
1. Disconnect the ribbon cable from the main control board.



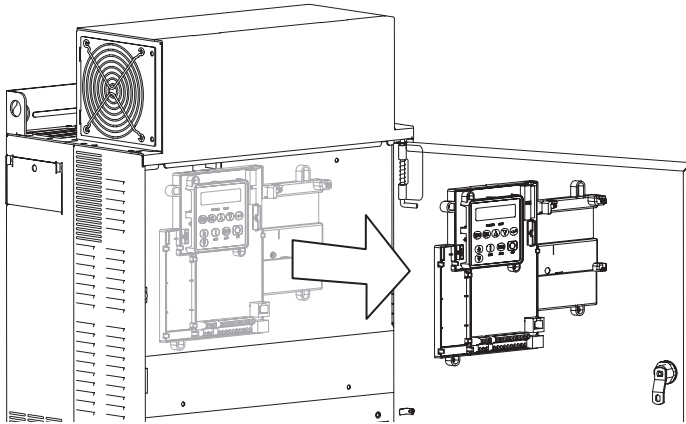
ATTENTION: Do not pull on the wires of the ribbon cable.



2. Remove the four screws from the plastic tray holding the main control board.



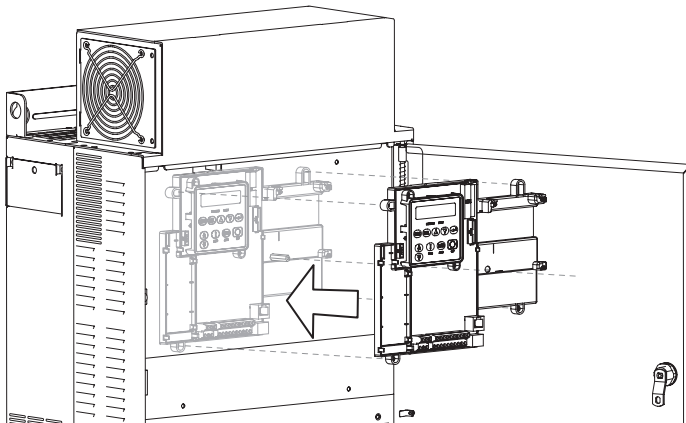
3. Remove the plastic tray together with the main control board.



4. Place the new plastic tray with the new main control board where the old tray was.

IMPORTANT

The main control board should fit the plastic tray snugly.



5. Place the four screws back in to secure the plastic tray.
Torque to about 0.9...1.1 N-m (8.0...9.7 lb.-in).

IMPORTANT

For Frame D, use the four tapping 4*8 mm screws.
For Frames E-H, use the four M4*8 mm screws.

6. Connect the ribbon cable to the new control board.

IMPORTANT

Make sure the ribbon cable connector is fully seated on the main control board connector.

7. Check that all of the cables are properly seated.

Putting the Drive Back Together

Frame D

- Place the front cover back to its original position and torque the two captive cover screws to about 1.0...1.2 N-m (8.9...10.6 lb.-in.).

Frame E

- Place the front cover back to its original position and torque the four captive screws to about 1.0...1.2 N-m (8.9...10.6 lb.-in.).

Frame F

- Close the door and turn the latch clockwise.

Frame G

- Install the front cover and torque the four captive screws to about 1.3...1.5 N-m (11.5...13.3 lb.-in.).

Frame H

- Install the front cover and torque the four captive screws to about 1.2...1.8 N-m (10.6...15.9 lb.-in.).

Programming the Parameters for the Main Control Board

1. Power up the drive.
2. Go to parameter A196 and enter the value 7625.
3. Set the following parameters to the values obtained from the old main control board:
 - H418 [Set Drive Type]
 - H446 [DC-bus Cal 1]
 - H447 [DC-bus Cal 2]
 - H448 [DC-bus Cal 3]

IMPORTANT

To ensure proper operation, set these values to exactly match the values from the old main control board.



ATTENTION: The hidden parameters are internal drive parameters. Making any changes other than those specified here can result in erroneous operation or drive failure.

4. Go to parameter A196 and enter the default value of 0400.

This hides the H group parameters.
5. Go to parameter P041 and enter a value of 1.

This resets the drive to the factory defaults for the drive type selected in parameter H418.
6. Use DriveExplorer or a 22-HIM to download the user parameters copied from the old main control board to the new board.

Notes:

www.rockwellautomation.com

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