

## Replacing the Control Board

Replacing the control board includes two steps:

1. Removing the existing control board from the drive.
2. Installing a new control board in the drive.

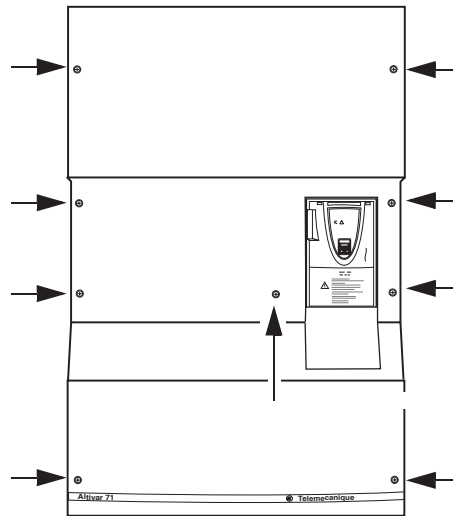
This section covers both of these procedures.

## Removing the Control Board

To remove the old control board:

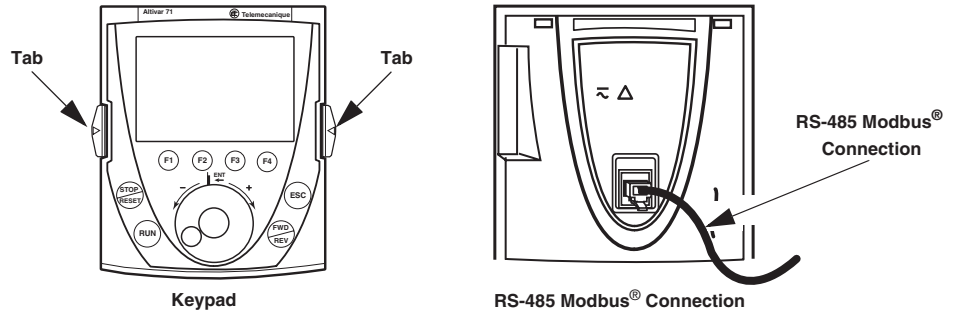
1. Save any configuration as necessary using the keypad.  
For information regarding saving a configuration, refer to the *Altivar 61 Variable Speed Drive Programming Manual*, part number 1760649, or the *Altivar 71 Variable Speed Drive Programming Manual*, part number 1755855.
2. Before replacing the control board, perform the bus voltage measurement procedure on page 4 of this bulletin.
3. If the drive is frame size 9 or larger, remove the front cover as follows:
  - a. Remove the nine Phillips head screws from the front cover. Refer to Figure 1.  
Save these screws to secure the front panel after the control and motor boards are replaced.
  - b. Lift the front panel away from the drive.

**Figure 1: Front Panel Screw Locations**



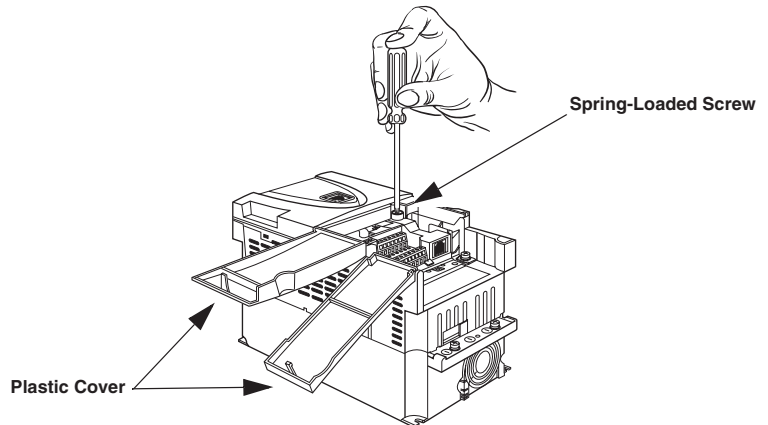
4. Remove the keypad by pressing the tabs on each side of the keypad and pulling the keypad straight out. Refer to Figure 2.  
If the drive is configured with an RS-485 Modbus® connection, use your thumb and forefinger to compress the connector and pull it straight out.

**Figure 2: Keypad and RS-485 Connection Location**



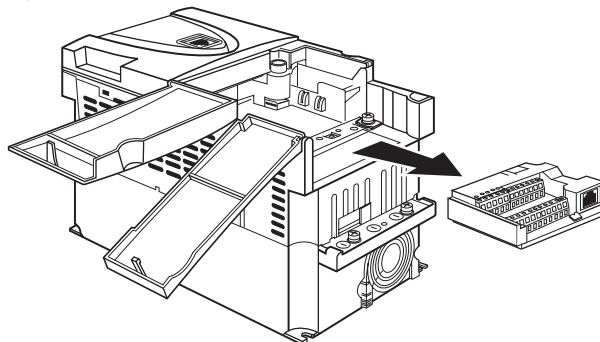
5. Remove the terminal board as follows. Refer to Figure 3.
  - a. Open the plastic covers over the terminal board.
  - b. Using a flathead screwdriver, loosen the spring-loaded screw in the upper right corner of the terminal board until it pops up.

**Figure 3: Loosen the Spring-Loaded Screw**



- c. Slide the terminal board toward the bottom of the drive and lift it out. Refer to Figure 4.

**Figure 4: Remove the Terminal Board**

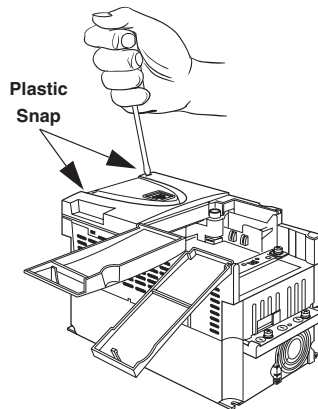


6. If the drive has a space filler board and/or an option card, skip this step and go to Step 7.

If the drive does not have a space filler board and/or an option card, release the display support cover from the front of the drive as follows. Refer to Figure 5.

- a. Slide a flathead screwdriver into position above the plastic snap.
- b. Move the screwdriver toward the base of the drive to release the snap.

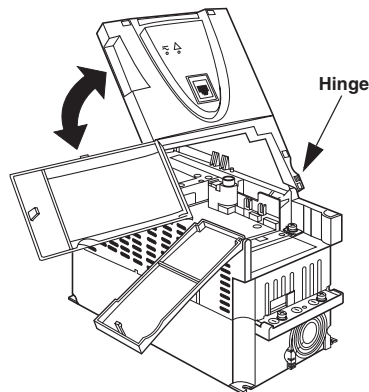
**Figure 5: Remove the Display Support Cover**



- c. Remove the display support cover from the drive by gently lifting the cover away from the drive.

**NOTE:** Be sure the cover releases from the hinge. Refer to Figure 6.

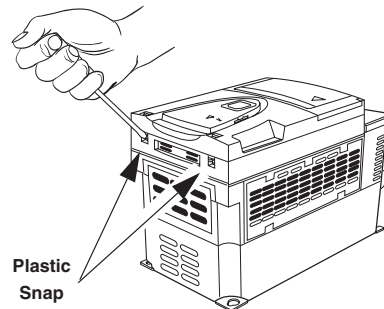
**Figure 6: Display Support Cover Hinge**



7. If the drive has a space filler board and/or an option card, remove the drive support cover as follows. Refer to Figure 7.
  - a. Insert a screwdriver above the plastic snap.
  - b. Press down to release the snap.
  - c. Remove the display support cover, along with the space filler board and/or option card, from the drive by gently lifting it away from the drive.

**NOTE:** Be sure the cover releases from the hinge.

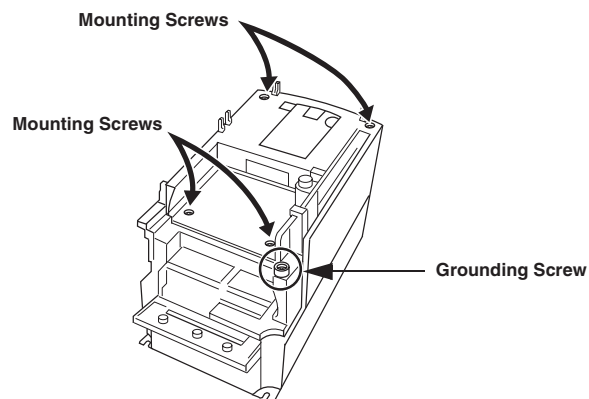
**Figure 7: Drive with Space Filler and/or Option Card**



8. Release the control board from its mounting frame as follows. Refer to Figure 8.
  - a. Using a T-10 Torx® bit, remove the four mounting screws from the four corners of the control board.
  - b. Using a T-20 Torx® bit or flathead screwdriver, remove the grounding screw from the bottom right of the control board.  
Save all screws for reuse when installing the new board(s).

**NOTE:** On frame sizes 9 or larger, the screws also have washers. Be sure to carefully remove the washers when removing the screws and retain them for reuse.

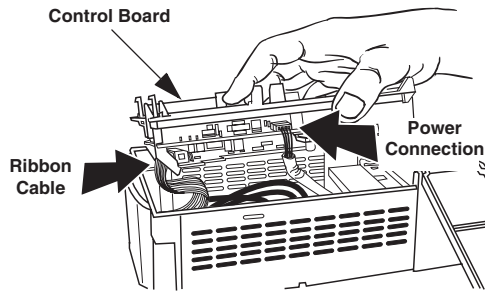
**Figure 8: Remove Screws**



For Drives with a Frame Size 8 or Smaller

9. Remove the control board as follows:
  - a. Gently lift the control board from the drive.
  - b. Carefully remove the ribbon cable and the power connection from the control board. Refer to Figure 9.
  - c. Go to step Step 12.

**Figure 9: Control Board—Frame Size 8 or Smaller**

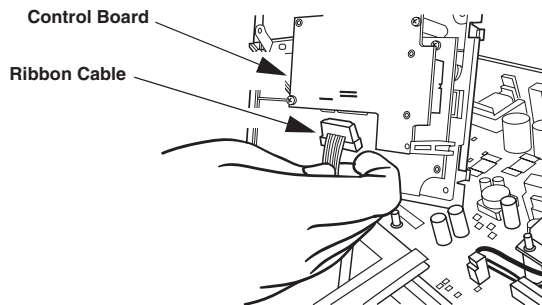


For Drives with a Frame Size 9 or Larger

**NOTE:** On frame sizes 9 or larger, the control board and the motor control board are separate. Installing the kit involves removing and replacing both boards.

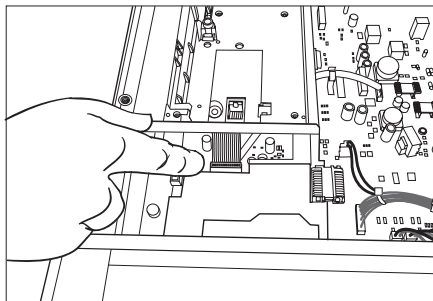
- a. Carefully remove the ribbon cable from the side of the control board. Refer to Figure 9.
- b. Gently lift the control board from the drive.
- c. Remove the 26-pin ribbon cable from the top of the control board. Refer to Figure 10.

**Figure 10: Control Board—Frame Size 9 or Larger**



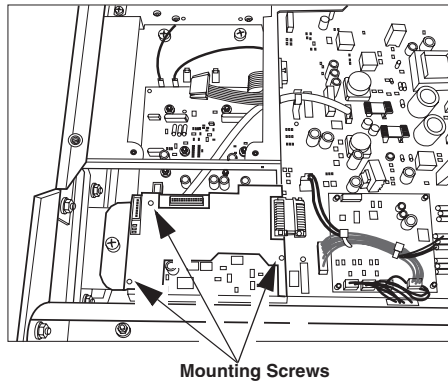
- d. Remove the 26-pin ribbon cable from the motor control board. Refer to Figure 11.

**Figure 11: Motor Control Board—Frame Size 9 or Larger**



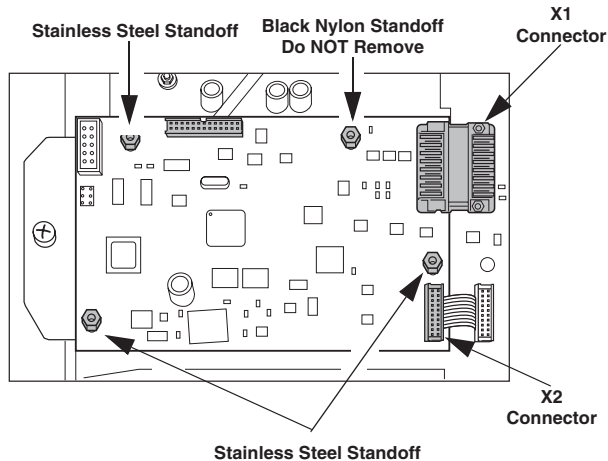
10. Remove the EMC plate as follows. Refer to Figure 12.
  - a. Using a T-10 Torx® bit, remove the three mounting screws and washers which hold the EMC plate in position.  
Save all screws and washers for reuse when installing the new board.
  - b. Lift the EMC plate from the drive.

**Figure 12: EMC Plate—Frame Size 9 or Larger**



11. Remove the motor control board. Refer to Figure 13.
  - a. Using a 5.5 mm socket wrench, remove the three stainless steel standoffs from the motor control board.  
**NOTE:** Do NOT remove the black nylon standoff.
  - b. Remove the 10-pin ribbon cable from connector (X2).
  - c. Release the board from connector X1 by sliding the board toward the outside frame.
  - d. Gently lift the board from the drive.

**Figure 13: Location of Standoffs and Ribbon Connector**



12. Discard the control board and the motor control board.

## Installing the New Control Board

For Drives with a Frame Size 8 or Smaller

For drives with a frame size of 9 or larger, skip to page 12.

For drives with a frame size of 8 or smaller, install the new control board as follows:

1. Connect the ribbon cable and the power cable from the power board to the new control board. Refer to Figure 9 on page 9.  
**NOTE:** Be careful not to pull the power board connections loose during installation.
2. Position the control board onto the mounting frame.
3. Using a T-10 Torx® bit, secure the control board with the four 3x12 mounting screws removed earlier. Refer to Figure 8 on page 8.  
Torque the screws to 6.12–7.68 lb-in (0.69 – 0.88 N•m).
4. Install the M4x6 grounding screw and torque it to 9.72 – 15 lb-in (1.1 – 1.7 N•m). Refer to Figure 8 on page 8.
5. Position the display support cover on the front of the drive, hook the bottom feet into position, and snap the top of the display support cover in place. Refer to Figure 6 on page 7.
6. Replace the terminal board as follows. Refer to Figure 3 on page 6.
  - a. Position the terminal board into the drive.
  - b. Slide the terminal board toward the top of the drive.
  - c. Snap the terminal board securely into place.
  - d. Using a flathead screwdriver, tighten the spring-loaded screw. Refer to Figure 3 on page 6.
7. Close the plastic covers over the terminal board. Refer to Figure 3 on page 6.
8. Replace the keypad by aligning it on the display support cover and snapping it into place. Refer to Figure 2 on page 6.  
If the drive is configured with an RS-485 Modbus connection, use your thumb and forefinger to compress the connector and slide it into the port.
9. If a configuration was saved, restore the drive configuration using the keypad.
10. Completely test the drive operation before placing the controller into service.

For Drives with a Frame Size 9 or Larger

1. Install the new motor control board as follows. Refer to Figure 13 page 10.
  - a. Position the board in the drive.
  - b. Slide the board toward connector X1 until it seats.
  - c. Ensure that the three standoff holes on the board align with the holes in the board support.
  - d. Connect the 10-pin ribbon cable to connector X2.
  - e. Using a 5.5 mm socket wrench, install the three stainless steel standoffs on the motor control board.
2. Install the EMC plate as follows. Refer to Figure 12 on page 10.

## **▲ CAUTION**

### **IMPROPER EQUIPMENT OPERATION**

- Be sure to install the EMC plate as directed in these instructions.
- Do not operate the drive without the EMC plate properly in place.

**Failure to follow this instruction can result in injury or equipment damage.**

- a. Position the EMC plate over the motor control board.
  - b. Using a T-10 Torx® bit, secure the EMC plate to the stand-offs with the three mounting screws and washers.
3. Install the control board as follows:
    - a. Attach the 26-pin ribbon cable to the control board. Refer to Figure 10 on page 9.
    - b. Attach the other end of the 26-pin ribbon cable to the motor control board. Refer to Figure 11 on page 9.
    - c. Follow the same procedure as described for frame size 8 or smaller drives. Perform Step 1 through Step 10 on page 11.
  4. When all the components are installed, position the front panel and secure it using the nine Phillips head screws removed at the beginning of the procedure.
  5. If a configuration was saved, restore the drive configuration using the keypad.
  6. Completely test the drive operation before placing the controller into service.