



product modification

050-2650-01

M71561, M71709

ACQUISITION CIRCUIT BOARD REPLACEMENT

For TEKTRONIX® 222 Digital Storage Oscilloscopes:

Serial Numbers B010100 - B013710

A new Acquisition circuit board, pn 671-0060-02, replaces Acquisition circuit board, pn 671-0060-00, which is no longer available. Installation of the new circuit board requires replacing the circuit board housing with a slightly larger housing.

NOTE

If the instrument serial number is greater than those listed above or if this kit has been installed previously, disregard the instructions and use pn 671-0060-02 as a direct replacement for the Acquisition circuit board.

Copyright © 1990
Tektronix, Inc.
All Rights Reserved

25-JUL-1990
Supersedes: 050-2650-00

page 1

CAUTION

STATIC SENSITIVE DEVICES

Static discharge can damage any semiconductor component in this instrument. Static voltages of 1kV to 30kV are common in unprotected environments.

TO AVOID DAMAGE, OBSERVE THE FOLLOWING:

1. Minimize handling of static-sensitive components.
2. Transport and store static-sensitive components or assemblies in their original containers, on a metal rail, or on conductive foam. Label any package that contains static-sensitive assemblies or components.
3. Discharge the static voltage from your body by wearing a wrist-strap while handling these components. Servicing static-sensitive assemblies or components should be performed only at a static-free work station by qualified service personnel.
4. Nothing capable of generating or holding a static charge should be allowed on the work station surface.
5. Keep the component leads shorted together whenever possible.
6. Pick up components by the body, never by the leads.
7. Do not slide the components over any surface.
8. Avoid handling components in areas that have a floor or work-surface covering capable of retaining a static-charge.
9. Use a soldering iron that is connected to earth ground.
10. Use only approved, anti-static type, desoldering tools.

KIT PARTS LIST:

Ckt. No.	Quantity	Part Number	Description
	1 ea	119-3548-01	Housing assy: 222 circuit board. w/EMI gasket
A1	1 ea	671-0060-02	Circuit board assy: Acquisition
	1 ea	-----	Label: 050-kit

INSTRUCTIONS:

- () 1. Remove the six front panel knobs using a 1/16 inch hexagonal wrench.
- () 2. Open the battery compartment. then disconnect and remove the battery.
- () 3. Place the 222 on its top on a flat anti-static work surface.
- () 4. Remove the five screws (three long and two short) from the bottom cabinet using a T15 Torx head wrench.
- () 5. Remove the two hexagonal standoff posts from the RS-232 connector on the rear panel using a 3/16 inch open-end wrench or nutdriver.
- () 6. Turn the 222 over and set it down with the front panel facing you.
- () 7. Pull the bottom of the front panel assembly out until it clears the bottom cabinet half. Then, disengage the top of the front panel from the top cabinet half and pull the front panel assembly slightly away from the instrument (extending the connecting cable only about an inch).
- () 8. Note the orientation, then disconnect the 6-wire cable coming from the Keypad board to the Front Panel Switch board.
- () 9. Lift the top cabinet half off the instrument.
- () 10. Disconnect the two 14-pin ribbon-cable connectors from the Front Panel Switch board, and remove the Front Panel assembly.
- () 11. Lift the Pot board assembly out of the bottom cabinet half. Note that there are slots in the bottom of the cabinet that align with the metal bracket holding the Pot board.
- () 12. Pull the probe cable retaining assembly out of the slots in the bottom cabinet half and push the probe cables back to provide more clearance.

CAUTION

The crt is a high-vacuum component. Wear the proper eye protection when handling the crt. Use care not to place excessive strain on the neck or connector pins. Place the crt in a protected location while it is out of the instrument.

- () 13. Pull up on the front of the Power Supply board to disconnect the Power Supply board from the connectors on the Main board, then lift the Power Supply board and crt out of the bottom cabinet half.
- () 14. Hold down the Main board and pull up on the center of the CPU/Display board to disconnect it from the two connectors securing it to the Main board.
- () 15. Lift the CPU/Display board up out of the bottom cabinet half.

NOTE

The Main board and Acquisition board must be removed from the bottom cabinet half as a unit.

- () 16. Disconnect both probe cables from their Acquisition board connectors by pulling straight out on the probe cable connector. Rotating a cable connector slightly may aid in getting it to release from the holder on the Acquisition board.
- () 17. Remove the T15 Torx head screw used to secure the Main board and External Trigger Input Connector housing to the bottom cabinet.
- () 18. Grasp the square black component on the Main board and pull the board forward slightly while pulling on the back of the bottom cabinet. This releases the External Trigger Input connector from the holes in the back of the cabinet. Lift the Main board and Acquisition board as a unit straight up out of the bottom cabinet.
- () 19. Disconnect the 4-wire connector from the top of the Acquisition board. Note orientation for reinstallation.
- () 20. Pull firmly and evenly on the front and middle of the Acquisition board to separate it from the Main board connectors.
- () 21. Separate the top and bottom Acquisition board housings and set the top housing and Acquisition board aside.
- () 22. Place the new Acquisition board in the bottom housing, align the connectors on the Acquisition board with the connectors on the left edge of the Main board, and reconnect the two boards.
- () 23. Reconnect the 4-wire connector to the top of the Acquisition board.
- () 24. Place the new Acquisition board housing, included in this kit, on the assembly.
- () 25. Place the Main board and Acquisition board assembly in the bottom cabinet.
- () 26. Install the screw used to secure the External Trigger Input Connector housing at the rear of the Main board.

- () 27. Position the CPU/Display board into the bottom cabinet half (the RS-232 connector is at the rear of the board).
- () 28. Align the connectors at the front end of the CPU/Display board with the pins on the Main board. You may have to guide the foam board support on the back side of the board past the edge of the bottom cabinet half to clear it.
- () 29. Plug the CPU/Display board into the Main board.
- () 30. Remove the INTENSITY knob extension from the intensity potentiometer shaft.
- () 31. Position the crt and Power Supply board assembly into the bottom cabinet half.
- () 32. Align the INTENSITY knob with the hole through the rear of the bottom cabinet half, and align the two connectors near the front of the Power Supply board with the pins on the Main board.
- () 33. Press down on the Power Supply board to mate the connector pins.
- () 34. Reinstall the INTENSITY knob extension on the intensity potentiometer shaft.
- () 35. Align the neck support bracket with the slots on the Power Supply and CPU/Display boards and the square holes on the Acquisition board housing and lower the crt into place.

CAUTION

The probe connectors must be aligned correctly with the pins on the Acquisition board to prevent damage to the connector pins when pushing the cable connectors into their holders.

- () 36. Reconnect the probe cable connectors to the Acquisition board and insert the probe retaining assembly into the slot in the bottom cabinet half.
- () 37. Position the Pot board assembly into the bottom cabinet half, lining the bottom of the bracket up with the slots in the cabinet.
- () 38. Refer to the Adjustment Procedure in the service manual and recalibrate as required.
- () 39. Ensure the probe leads and the circuit boards are all positioned correctly for reassembly of the cabinet.
- () 40. Position the top cabinet half on the bottom cabinet half, carefully align the two halves.

NOTE

Be sure the strap handle is properly captured between the top and bottom clips in the cabinet halves.

- () 41. Hold the two halves of the cabinet together and turn it over.
- () 42. Install the three long screws at the rear and center of the cabinet. Do not overtighten.
- () 43. Position the Front Panel assembly in place in front of the instrument.
- () 44. Reconnect the three connectors to the Front Panel Switch board. Dress the cables into the Pot board bracket as much as possible.
- () 45. Guide the pot shafts through the Front Panel Switch board with the top of the Front Panel assembly angled toward the top cabinet half. The five slots on the top of the Front Panel assembly must catch on the five tabs on the top cabinet half.
- () 46. With the top of the Front Panel assembly caught, press the bottom of the Front Panel assembly over the front edge of the bottom cabinet half.
- () 47. Install the two short screws that hold the Front Panel assembly to the bottom cabinet half.

CAUTION

Do not overtighten the hexagonal standoff posts when reinstalling them in the RS-232 connector. The recommended torque is 3.5 in/lbs.

- () 48. Reinstall the two hexagonal standoff posts in the RS-232 connector on the rear panel. Tighten only until snug.
- () 49. Reinstall the battery and turn on the power to make sure the instrument powers on.
- () 50. Turn off the power and reinstall the three larger Front Panel knobs.

NOTE

Do not overtighten the set screws in the knobs. Excessive pressure can burr the shafts and make them difficult to remove.

- () 51. Install the three smaller Front Panel knobs. Leave enough space between the large knobs and the smaller knobs so that positive switching occurs when the knobs are pressed in.
- () 52. Remove the protective backing from the 050-kit label, included in this kit, and place the label on a clean, flat surface of the bottom cabinet. The label indicates this kit has been installed.
- () 53. For future reference, update the Replaceable Parts lists in the Preliminary Service Manual with the information provided in the parts list of this kit.

JLG