D750Ex Electrical Troubleshooting Procedure

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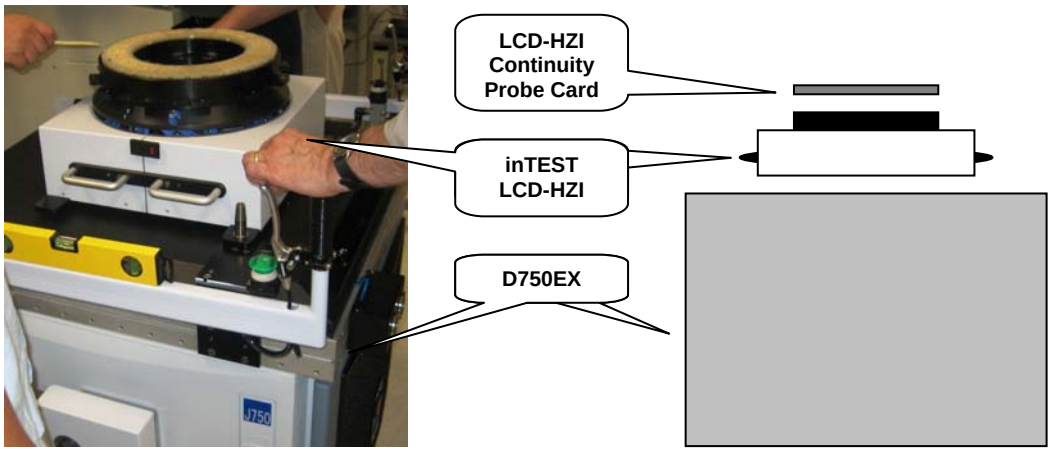
Tools Required:

- Continuity Probe Card - 603-783-00

Recommended Tools:

- Teradyne Field Service Kit (PN ?)
    1. HZI Assembly Stand
    2. Breakout Board
    3. Cable Carrier Removal Tool (inTEST PN 65496)
    4. Cardlet Install/Removal Tool (inTEST PN 65497)
    5. Pogo Pin Replacement Tool (inTEST PN 65528?)
    6. LCD Spring Pin Kit (603-981-00)
    7. HSD Spring Pin Kit (603-982-00)

Figure 1 – Reference Figure for D750Ex Test Cell Hardware



D750Ex Test Cell Electrical Troubleshooting Procedure

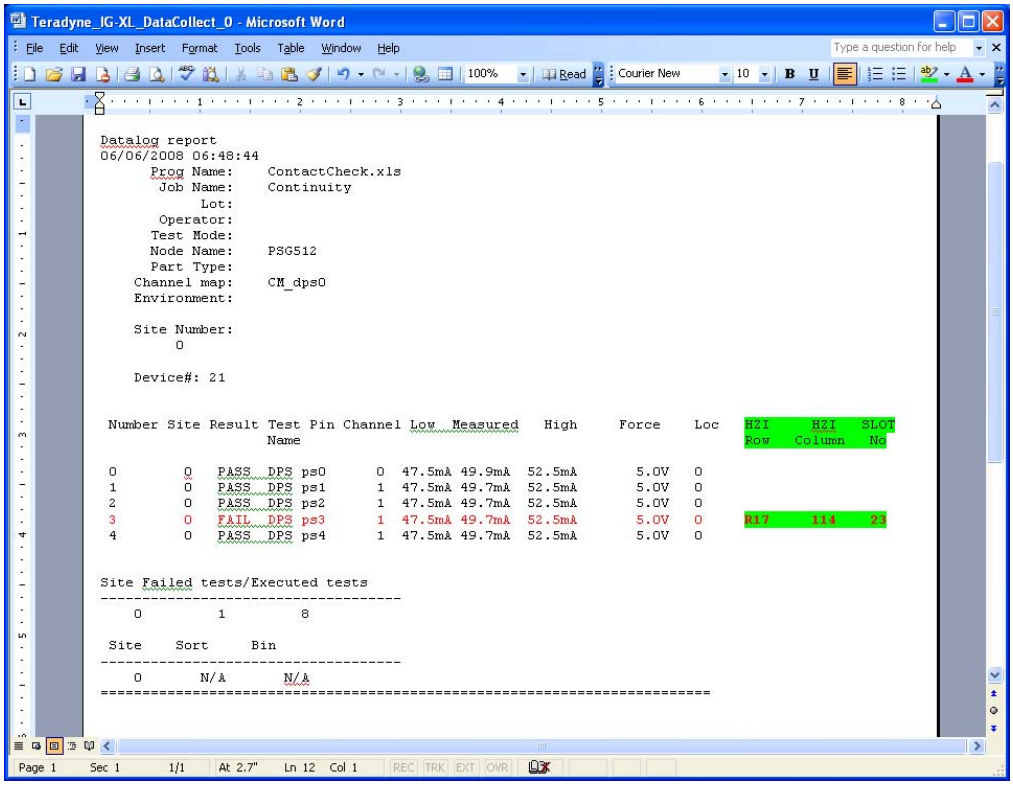
General Troubleshooting

Use this Procedure to assist in troubleshooting electrical failures on the HZI interface down to the FRU level.

1. Customer has a fault while running the device program.
2. Undock and remove the customer's probe card.
3. Install the Teradyne Continuity Probe Card (part number 601-312-00) onto the HZI (Test Cell) and dock the probe card using the Handler or the hand test fixture.
4. Run the LCD Continuity Probe Checker to identify the location of the failing pins. See Figure 2 – LCD Continuity Probe Checker Error Code. Add in Error Code displayed by checker. Record the location of the failing pins (or pair of pins). For example, from Figure 2 below, the failure is occurring on the DPS. The pin(s) that are failing are located on the top of the HZI interface at column 114, row R17.

> *Note: If there are no errors shown when using the Continuity Probe Card but errors reappear when the customers probe card is reinstalled, then the error is likely either in the customer's probe card or in the device program. Using the continuity probe card can assist in identifying continuity issues due to tester/HZI (it provides coverage for LCD, AMPU, DPS, Cal-Cub and HSD channels and signals) or due to alignment issues when docking the test head to the handler (provides positional pogo accuracy). By using the continuity probe card, you can rule out these issues if continuity passes when docked to the handler and you can focus the troubleshooting efforts on the probe card and device program.*

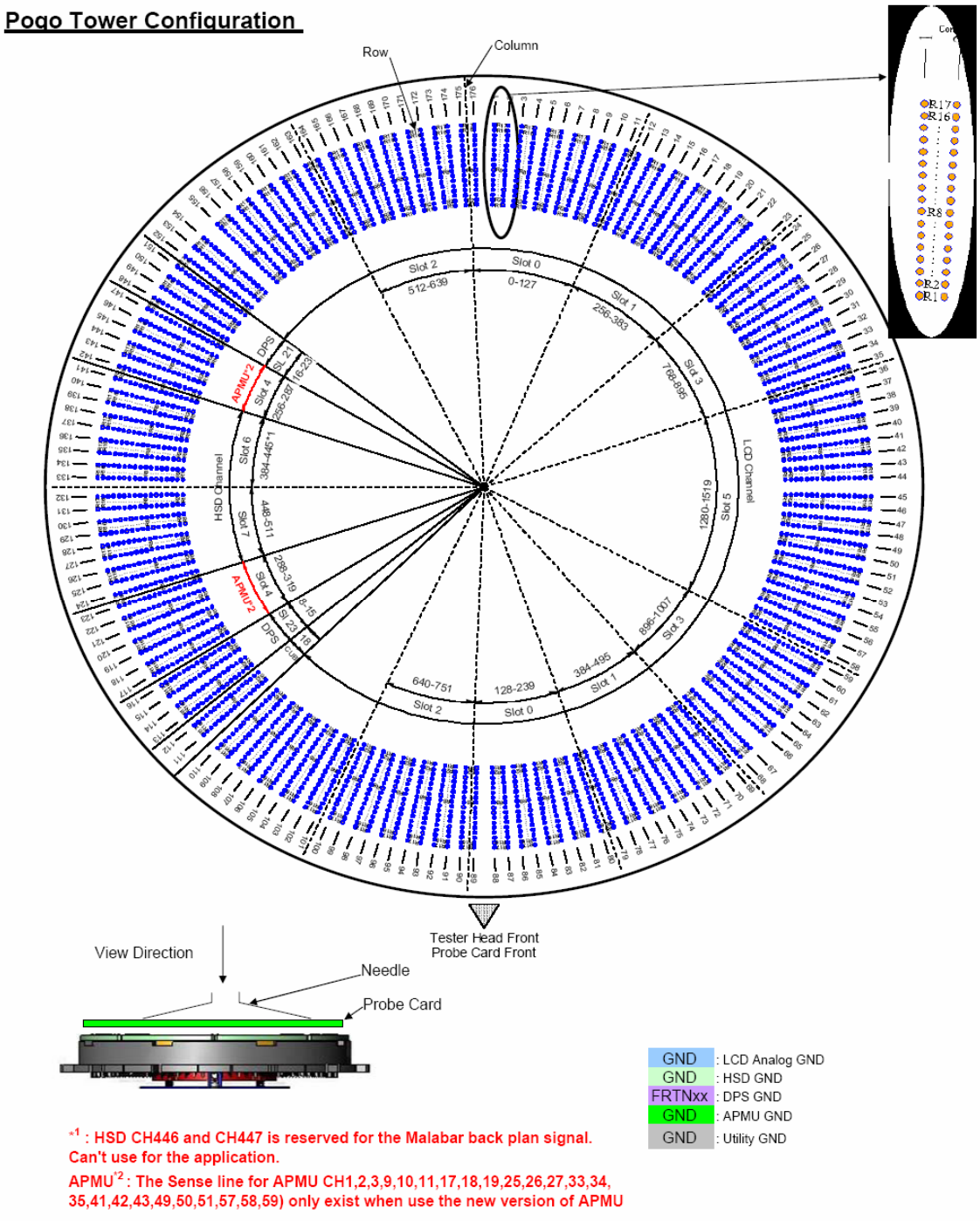
Figure 2 – LCD Continuity Probe Checker Error Code



5. Undock and remove the Continuity Probe Card.
6. Undock the HZI interface from the Handler.

7. Lower the Test Head to the Lower Hard Stop and move the Test Head to the service position.
8. Power down the Test Head.
9. Locate the failing pin on the HZI interface (reference Figure 3 LCD HZI Pogo Ring Pin Location), and replace the failing pogo pins. Make sure to use the correct part number (LCD or HSD).
    a. If the failing pin is bent or appears OK, use the needle nose pliers or the pogo pin replacement tool to remove the pin. When pulling pin out pin, be careful not to shear pin.
    b. If the failing pin is sheared, use the tool in the pogo pin replacement kit to remove the sheared pin.

Figure 3 – LCD HZI Pogo Ring Pin Location



10. Verify visually that none of the surrounding pins have been damaged and that the replacement pogo pins have been seated fully.
11. Power up the Test Head.
12. Dock the HZI to the Handler.
13. Install the Continuity Probe Card and verify that the HZI passes continuity.
14. If the Checker still fails, verify that the vacuum seal connecting the HZI interface to the Test Head is properly sealed.
    a. Remove the probe card, undock the HZI interface from the handler, lower the test head to the lower hard stop and move the test head to the service position.
    b. Check the vacuum gauges to verify that the vacuum seal is secure, allowing the test head pins
    c. Turn off vacuum pressure, raise HZI interface off of the DIB interface, reseat HZI interface and turn back on vacuum pressure. Check vacuum gauges to ensure proper seal.
    d. Re-run continuity using probe card and verify if failures are still present. If the failures are random, repeat this test again.
15. If the Checker still fails, verify whether the fault is in the Interface or on the D750Ex instrument board.
    a. Remove the probe card, undock the HZI interface from the handler, lower the test head to the lower hard stop and move the test head to the service position.
    b. Turn off the vacuum and remove the HZI interface from the test head.
    c. Verify that the daughter card is installed and seated correctly on the HZI interface.
    d. Inspect the pogo pins on the D750Ex boards and verify no pins are bent or damaged.
    e. Run system level continuity to verify whether the fault is within the system or the interface.
16. If the system level continuity fails, then the problem is within the D750Ex system. Troubleshoot the system and the boards.
17. If the system level continuity passes, then the issue is likely in the HZI interface. Refer to the section **Internal HZI Troubleshooting**.

Internal HZI Troubleshooting

1. Remove the probe card
2. Undock the HZI interface from the handler
3. Lower the test head to the lower hard stop and move the test head to the service position.
4. Turn off the vacuum and power down the test head.
5. Remove the HZI interface from the test head.
6. Place HZI Unit on stand. The unit must be raised above the cross members and then placed on the cross bars. See the Figure 4 - HZI Stand. Add Figure 4 – HZI Stand.
7. Locate the failing pins and cable locations using Figure (HZI Pogo Ring Pin Location).
8. Verify that the cardlets are seated correctly in the pogo ring. If the cardlets are not seated, reseat the cardlets and rerun the probe continuity tests.
9. Using a multimeter and the wiring diagram, locate the failing pin and associated location on the HIB. Check continuity and verify there is continuity through the HZI. See Figure 5 (Multimeter check). Add Figure 5 – Multimeter Check.
    a. If you are not getting continuity through the HZI interface, there could be an issue with seating the carrier connector, with the cable assembly, or with the HIB.
    b. If you are getting continuity through the HZI interface, then the HZI unit is likely OK, but the failures could be caused by an alignment issue, seating issue, or mechanical issue with not compressing the pins enough.

Figure 5 – Multimeter Check

10. Using the procedure in the FRU replacement manual, open the enclosure and trace the cables down to the appropriate carrier connector. You can also reference the figure (HIB carrier connector locations) to identify the J location on the HIB.
11. Verify that the carrier assemblies are seated correctly on the HIB. If the carrier connectors are not seated properly, reseat them and rerun the probe continuity test.
12. If the failure is still occurring, remove the appropriate carrier connector from the HIB frame. Install the carrier connector into the breakout board and verify there is continuity within the cable assembly. See Figure 6 – Continuity Check w/ Breakout Board.
    a. If continuity fails, use the HZI FRU replacement procedure to replace the failing cable and re-run continuity.
    b. If continuity passes, the failure is likely in the HIB.

Figure 6 – Continuity Check w/ Breakout Board

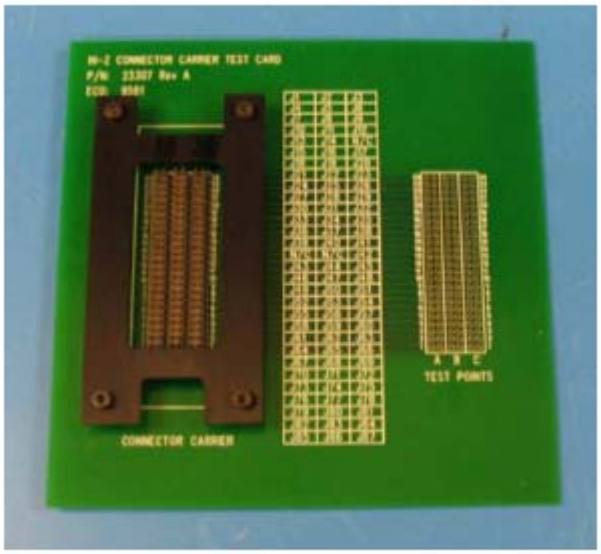


Fig 5.9.29

Fig 5.9.30

13. Using the multimeter, verify continuity between the underside of the HIB and the pins that the carrier connector connects to.
    a. If continuity between the HIB fails, replace the HZI interface (the HIB is not a FRU).
    b. If continuity passes, re-install the cable assembly and check continuity through the interface again – underside of HIB to pogo pin in pogo ring.
14. Install HZI interface onto the test head and power up the test head. Verify that the vacuum seal is properly sealed.
15. Using the LKT cart, move the Test Head to the Docking position and dock the HZI to the handler.
16. Install the Continuity Probe Card and verify that the HZI passes continuity.
17. If continuity still fails, replace the HZI interface.