

Procedure for ladder assembly into barrels for the SMT

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1 Electrical Test before installation

1.1 Set up system

1. Get ladder from dry box and traveler from file cabinet.
2. Ground yourself.
3. Insert HDI tail into Hirose connector with back of tail facing up.
4. Check Temperature sensor before applying power to the detector. Record reading from HP Digital Voltmeter. Normal reading is +5V.

1.2 Test without bias

1. Set the Tektronic power supply to 9 chip ladder voltage configuration by pressing *SHIFT RECALL 4.6* before turning on the power supply.
2. Turn on Tektronic with usual sequence *ON, RECALL NEXT, RECALL NEXT*.
3. Turn on crate.
4. Open spreadsheet *ladder_install.xls* and go to *cal_crtl* page.
5. Set ignore flag to 21.
6. Press *BIT 3*.
7. Press *Init Saseq* and make sure the saseq goes to idle (710).
8. Press Setup, and choose L9 in chain 0 and – in chain 1.
9. Record currents for AVDD, AVDD2 and DVDD. Normal readings are 0.4A (AVDD), 0.2A (AVDD2), 0.15A (DVDD).
10. Press *RAW*. Look at results.
11. Select *Mask 0* and take a Pedestal run by pressing *Charge Inject*. Look at results.
12. Select *Mask 1* and take a cal inject run by pressing *Charge Inject*. Look at results.

1.3 Bias the detector

1. Check the battery in Shade Tree Nanoammeter by pressing *Batt. Test*.
2. Set the bias switches to the *6, 9 chip, F* and *SPLIT BIAS* positions.
3. Go to the *bv_status* page in the *ladder_install* spreadsheet.
4. Press *Init 617* and *Reset (off if on)*.
5. Turn on the positive HV supply at 0V by setting B1 to 0 and pressing *ON*.
6. Turn on the negative HV supply at 0V by setting B1 to 1 and pressing *ON*.
7. Set the negative voltage to 5V by pressing *Set Voltage* and entering 5 in the pop-up window.
8. Press *Update Status* and check the voltage (H29) and the current (L29). **IF THE CURRENT IS GREATER THAN 10 μ A STOP.**
9. Ramp up the negative HV **IN 5V STEPS** until the negative bias voltage setting is reached. Remember to update the readings by pressing *Update Status*.
10. Switch over to controlling the positive HV supply by setting B1 to 0.
11. Set the positive voltage to 5V by pressing *Set Voltage* and entering 5 in the pop-up window.
12. Press *Update Status* and check the voltage (H30) and the current (L30). **IF THE CURRENT IS GREATER THAN 10 μ A STOP.**
13. Ramp up the positive HV **IN 5V STEPS** until the positive bias voltage setting is reached. Remember to update the readings by pressing *Update Status*.
14. Record the voltage settings (H29&H30), the current readings (L29&L30), and the reading from the Nanoammeter.

1.4 Test with detector biased

1. Go to the *cal_crtl* page and take pedestals by selecting *Mask 0* and pressing *Charge Inject*.
2. Compare results with burn_in results in the traveler.
3. Label the plot with “detector ID – before installation”.
4. Print out results.
5. Record the temperature reading from the HP Digital Voltmeter. Normal reading is +6V.

1.5 Turn system off

1. Go to the *bv_status* page.
2. Ramp the positive voltage down by pressing *Set Voltage* and entering 0 in the pop-up window. Remember to update the readings by pressing *Update Status*.
3. Switch over to controlling the negative HV supply by setting B1 to 1.
4. Ramp the negative voltage down by pressing *Set Voltage* and entering 0 in the pop-up window. Remember to update the readings by pressing *Update Status*.
5. Wait until both power supplies reach 0V.
6. Turn off the negative power supply by pressing *OFF*.
7. Switch over to controlling the positive HV supply by setting B1 to 0.
8. Turn off the positive power supply by pressing *OFF*.
9. Go to the *cal_ctrl* page.
10. Set ignore flag to 0.
11. Press *Init Saseq* and make sure the saseq is disabled (000).
12. Turn the crate off.
13. Turn the Tektronic supply off.
14. Ground yourself
15. Disconnect the HDI tail from the Hirose connector.