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C-A OPERATIONS PROCEDURES MANUAL

4.44.6 PASS Maintenance Procedure: Calibration of Current Source Board
(Group Proc. No. 101-A)

Attachment

Text Pages 2 through 4

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: _____ Signature on File _____
Collider-Accelerator Department Chairman Date

D. McDonald

4.44.6 PASS Maintenance Procedure: Calibration of Current Source Board

1. Purpose

Note:

This procedure will require disconnection of the current source board from the rest of the system. Therefore the procedure must be conducted while PASS is down for maintenance. However, if it is necessary to have at least one Division of PASS functioning, then leave one Division connected while the other is being serviced.

A data sheet is attached to this procedure. All information that you are asked to record should be recorded on the data sheet.

2. Responsibilities

None

3. Prerequisites

None

4. Precautions

None

5. Procedure

- 5.1 Obtain a Fluke 77 multimeter or equivalent. The calibration should be current. Record the model, serial number, and calibration date on the data sheet.
- 5.2 Leave the power connectors and output connectors in place on the current source board. The board should be warmed up for 30 minutes before taking measurements.
- 5.3 Check input power as follows:
 - 5.3.1 Set the multimeter to measure DC Volts
 - 5.3.2 Place the Common lead on TP37 and the Volts lead on TP 34. Record the reading on the data sheet. The nominal value should be 24VDC.
 - 5.3.3 If the reading is less than 23.95V, or greater than 24.05V, then stop this procedure until either the power supply is adjusted or your multimeter is checked. Use the applicable PASS maintenance procedure to adjust the supply.
 - 5.3.4 Place the Common lead on Tp37 and the Volts lead on TP35. Record the reading on the data sheet. The nominal value should be -18VDC.

- 5.3.5 If the reading is less than -18.05V, or greater than -17.95V, then stop this procedure until either the power supply is adjusted or your multimeter is checked. Use the applicable PASS maintenance procedure to adjust the supply.
- 5.4 Check internal power rails (do not attempt to adjust):
 - 5.4.1 Set the multimeter to measure DC Volts
 - 5.4.2 Place the Common lead on Tp37 and the Volts lead on TP36. Record the reading on the data sheet. The nominal value should be -15VDC.
 - 5.4.3 If the reading is less than -15.02V, or greater than -14.98V, then stop the procedure and report this to the system engineer.
 - 5.4.4 Place the Common lead on TP37 and the Volts lead on TP38. Record the reading on the data sheet. The nominal value should be +15VDC.
 - 5.4.5 If the reading is less than 14.98V, or greater than 15.02V, then stop the procedure and report this to the system engineer.
- 5.5 Adjust the -10V reference:
 - 5.5.1 Set the multimeter to measure DC Volts.
 - 5.5.2 Place the Common lead on TP37 and the Volts lead on TP41.
 - 5.5.3 Record the voltage in the “Before Adjustment” column of the data sheet.
 - 5.5.4 Adjust Trimpot R127, if necessary, so that the meter reads -10.00 VDC.
 - 5.5.5 Record the final reading in the “After Adjustment” column.

Note:

In the next section you will check the current outputs. The board is organized as 4 banks of 4 channels (total 16 channels). Each bank is adjusted by a single trimpot. You cannot adjust individual channels, only individual banks.

The current is verified by measuring the voltage drop across a precision resistor in the circuit.

- 5.6 Check the output currents:
 - 5.6.1 Leave all of the connectors plugged in.
 - 5.6.2 Set the multimeter to measure DC Volts.
 - 5.6.3 Do not make any adjustments until you have recorded all readings.
 - 5.6.4 Place the Common lead and the Volts lead across Resistor R20.
 - 5.6.5 Record the reading in the “Before Adjustment” column. The nominal value should be 750 mV.
 - 5.6.6 Place the Common lead and the Volts lead across Resistor R22.
 - 5.6.7 Record the reading in the “Before Adjustment” column. The nominal value should be 750 mV.
 - 5.6.8 Place the Common lead and the Volts lead across Resistor R24.

- 5.6.9 Record the reading in the “Before Adjustment” column. The nominal value should be 750 mV.
- 5.6.10 Place the Common lead and the Volts lead across Resistor R26.
- 5.6.11 Record the reading in the “Before Adjustment” column. The nominal value should be 750 mV.
- 5.6.12 Adjust the current outputs, if necessary, using Trimpot R15. This trimpot will adjust the entire bank of four channels.
- 5.6.13 Record the final voltages in the “After Adjustment” column. This completes one bank.
- 5.6.14 Repeat steps 1.6.3 through 1.6.13 for the other three banks. The data sheet tells you which measurement points and trimpots to use.

6. Documentation

None

7. References

None

8. Attachment

8.1 Data Sheet

Attachment 8.1

Data Sheet

Item Code _____

Technician Name _____

Date of Test _____

Multimeter: Model _____ Serial No. _____ Cal Date _____

Parameter	Before Adjustment	After Adjustment
+24V input power		
-18V input power		
-15V internal power rail		XXXXXXXXXXXXXXXXXXXXXXXXXX
+15V internal power rail		XXXXXXXXXXXXXXXXXXXXXXXXXX
-10V reference		

Current Bank/Channel	Test Point	Trimpot to Adjust	Before Adjustment	After Adjustment
Bank 1 – Chan 1	R20	R15		
Bank 1 – Chan 2	R22	R15		
Bank 1 – Chan 3	R24	R15		
Bank 1 – Chan 4	R26	R15		
Bank 2 – Chan 5	R51	R46		
Bank 2 – Chan 6	R53	R46		
Bank 2 – Chan 7	R55	R46		
Bank 2 – Chan 8	R57	R46		
Bank 3 – Chan 9	R82	R77		
Bank 3 – Chan 10	R84	R77		
Bank 3 – Chan 11	R86	R77		
Bank 3 – Chan 12	R88	R77		
Bank 4 – Chan 13	R113	R108		
Bank 4 – Chan 14	R115	R108		
Bank 4 – Chan 15	R117	R108		
Bank 4 – Chan 16	R119	R108		