

Technical Service Bulletin 040108

Calibration of Focus Sensors: DCX Paragon

The focus power supply provides DC current to electromagnets in the IOT trolley. These electromagnets provide an axial magnetic field along the length of the IOT that prevents the beam from defocusing due to the mutual repulsion of the electrons in the beam. If not properly focused, the beam may strike the body of the tube or not be collected properly by the multistage depressed collector, thereby lowering amplifier efficiency and possibly damaging the tube.

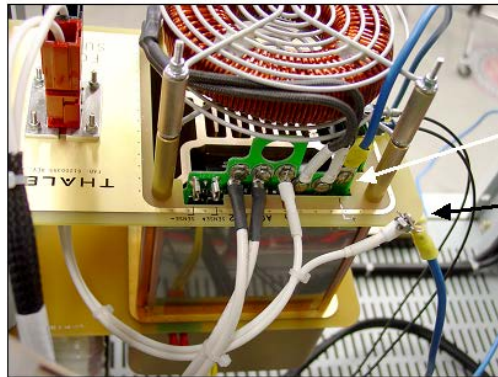
This bulletin discusses the calibration of the focus voltage and current readings. The adjustment of the focus current level is discussed in a separate bulletin (031208).

Procedure 040108: Calibration of Focus Voltage and Current Sensors	
Applicability	DCX Paragon transmitters.
Prerequisites	Correct meter calibrations (031209)
Equipment Required	Multimeter. Precision current metering shunt (25A).
Comments	None.

Focus Current Sensor Calibration

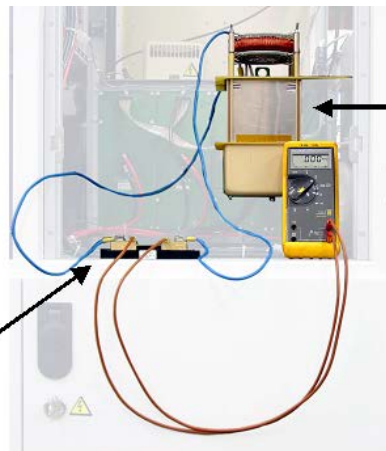
1. Place amplifier cabinet in **STOP** mode.
2. Place focus supply circuit breaker (CB9) on front panel to OFF position for safety.
3. Gain access to focus supply by removing rack panel directly above high voltage compartment.
4. Remove four hex nuts securing top cover of focus supply.
5. Remove top cover of focus supply and set aside.
6. Disconnect output lead from (+) terminal at rear of supply.
7. Attach current metering shunt inline with (+) terminal on focus supply and (+) lead disconnected in previous step. Place multimeter leads across shunt metering terminals.

Photo taken from behind focus supply



Metering shunt lead @
supply (+) terminal

Metering shunt lead @ (+) output lead
(secured with screw & nut)



Focus supply

Current metering shunt

8. Return focus supply breaker (CB9) to ON position.
9. Select **Focus** option on front panel current meter to obtain reading of focus current.
10. Navigate to focus current calibration menus via following sequence of buttons on LCD screen: **Information Access > System Operations > HPA Maintenance > Sensor Calibration > Focus, Beam, Body > Focus > Current > Offset**. Default technician password is 4444.

NOTE: Ready-made metering shunt & harness assemblies are available from Comark. Request part number 412828-01.

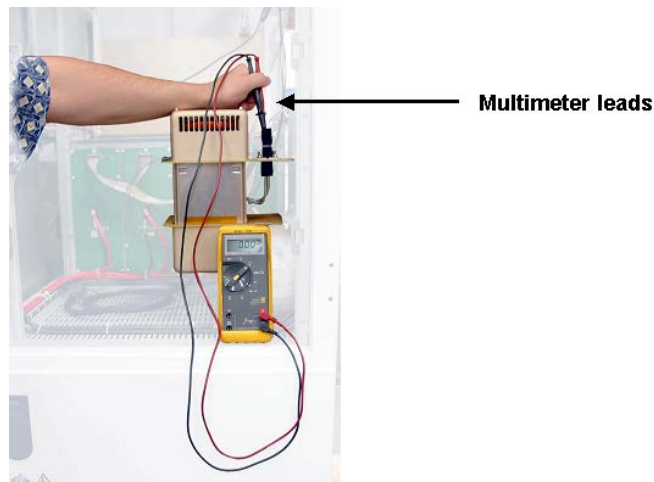
11. Use **Up** and **Down** menu options to adjust reading to exactly zero. Press **Ok** to save setting and return to previous menu.

NOTE: Do not go "past" zero. Continuing to press the down button will not physically drive the reading below zero, but the zero calibration factor will continue to decrease, thereby creating the potential for metering inaccuracy.

12. Place amplifier in **STANDBY** mode to activate focus supply.
13. Measure voltage drop across precision current metering shunt with digital voltmeter. Apply appropriate multiplication factor, according to Ohms law, to convert voltage drop reading to throughput current reading ($I = V/R$). Exact resistance value of shunt or V-A conversion factor should ideally be printed somewhere on shunt body. (Typical shunt will read 50A/50mV, so a voltage reading of 10mV corresponds to 10A).
14. Press **Scale**. Meter will move to a value. Use keypad to match reading on cabinet meter to current computed from voltmeter reading off shunt. Once proper current reading is obtained, press **Ok** to save setting and return to previous menu.
15. Place amplifier cabinet in **STOP** mode to deactivate focus supply.
16. Remove metering shunt and restore equipment to original condition.
17. Procedure complete.

Focus Voltage Sensor Calibration

1. Place amplifier cabinet in **STOP** mode, let high voltage drop off, and place ground switch in ground position using key interlock system.
2. Place focus supply circuit breaker (CB9) on front panel to OFF position for safety.
3. Gain access to focus supply by removing rack panel directly above high voltage compartment.
4. Insert multimeter leads into two plugs on top of focus supply. Do not disconnect plugs or operate focus supply unloaded. Route multimeter leads out of compartment and set multimeter to proper voltage scale.



5. Return focus supply breaker to ON position.
6. Select **Focus** option on front panel voltage meter to obtain reading of focus voltage.

7. Navigate to focus voltage calibration menus via following sequence of buttons on LCD screen: **Information Access > System Operations > HPA Maintenance > Sensor Calibration > Focus, Beam, Body > Focus > Voltage > Offset**. Default Technician password is 4444.
8. Use **Up** and **Down** menu options to adjust reading to (exactly) zero. Press **Ok** to save setting and return to previous menu.
9. Place amplifier cabinet in **STANDBY** mode to activate focus supply.
10. Press **Scale**. Meter will move to a value. Use keypad to match reading on cabinet meter to voltmeter reading. When proper voltage reading is obtained, press **Ok** to save setting and return to previous menu.
11. Remove multimeter leads and close compartment.
12. Procedure complete.

At Comark, we are constantly striving to improve the satisfaction of both our new and existing customers. Please do not hesitate to contact Comark Customer Service with any questions you may have concerning the contents of this service bulletin.

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