

Technical Service Bulletin 030612

Calibration of IOX / DCX Focus Voltage and Current Meters

Procedure 030612: Calibration of IOX / DCX Focus Voltage and Current Meters	
Applicability	All IOX and DCX transmitters.
Prerequisites	HPA cabinet in Start Mode.
Equipment Required	None.
Comments	The focus current and voltage meters do not typically require routine calibration.

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. When the beam defocuses, the electrons strike the body of the tube and create body current. Excessive body current can generate heat and internally damage the tube.

There exists a formula that allows a quick and easy check of the focus current and voltage calibrations. This formula is given below:

$$I_0 = \frac{V_0(I_0 - I_{-3V})}{3}$$

Where:

- I_0 = Focus current reading at nominal operating level.
- V_0 = Focus volts reading at nominal operating level.
- I_{-3V} = Focus current reading when the focus voltage is adjusted to three volts below the nominal operating level (via front panel potentiometer).

For example, if the following readings are obtained:

Volts	Current
8V	21.9A
5V	13.7

The calculation would be:

$$I_0 = \frac{8(21.9-13.7)}{3} = 21.8A \approx 21.9A \text{ original reading}$$

The value returned is close to the original recorded value at the nominal operating level of 8 volts, indicating that the focus current and voltage meters are in good calibration. If the value returned is not in close agreement, the focus meters may require internal calibration.

Internal Calibration of Focus Supply

The internal calibration of the focus current voltage requires the disassembly of the focus power supply drawer as is largely beyond the scope of this service bulletin. A suitable recalibration procedure for the focus power supply, once disassembled would be as follows:

1. Measure focus voltage appearing across TB1-9 and TB-10 inside focus supply.
2. Adjust potentiometer R14 until proper reading is obtained on transmitter focus voltage meter.
3. Connect calibrated 50A current shunt to output of focus supply.
4. Adjust potentiometer R11 until proper reading is obtained on internal current meter on front panel of focus power supply drawer.
5. Procedure complete.

Calibration of Remote Control Focus Current Reading.

In addition to the focus current meter internal to the focus power supply drawer, there is also a external reading appearing at the remote control interface. To calibrate this reading, use the following procedure:

1. Access focus current calibration menu by issuing following commands via HPA control panel: **Information Access > System Operations > HPA Maintenance > Password = 55555 > Meter Calibrations > Focus, Beam, Body > Focus Current.**
2. Use **Up** and **Down** menu options to adjust displayed meter readings until value obtained matches that read from internal focus current meter on focus power supply drawer. Press **Save** to save calibration and return to previous menu.
3. Select **Previous Screen** option five times to return to top-level **Information Access** menu.
4. Procedure complete.

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