

## Technical Service Bulletin 030606 IOX / DCX Interlock Check Procedure

It is very important to regularly check the proper functioning on the transmitter interlock circuits. This is especially true for mechanical switches, such as airflow sensors and flow meters, which may become stuck over time. The interlock check procedure contained in this bulletin is preliminary. Comark invites all IOX and DCX users to send in any suggestions or corrections to this procedure to [csfeedback@comarktv.com](mailto:csfeedback@comarktv.com)

<b>Procedure 030606: IOX/DCX Interlock Check Procedure</b>	
Applicability	All IOX transmitters.
Prerequisites	Transmitter in HPA Start Mode.
Equipment Required	None.
Comments	Should be performed on a regular basis as part of maintenance cycle.

1. Reduce threshold on three-phase detector relay K3. THREE PHASE POWER alarm LED should light on HPA control panel. Reset threshold control to previous position.
2. Reduce flow to IOT collector by slowly closing ball valve in rear of HPA cabinet. COLLECTOR COOLANT FLOW alarm should light. Reset flow rate to previous level.
3. Open input cavity lid (where applicable). Focus power supply should deactivate and FOCUS CURRENT alarm should light. Replace input cavity lid. Reset alarm with RESET button.
4. Disconnect primary cavity arc detector cable. ARC DETECTOR INTERLOCK alarm should light. Reconnect cable. Reset alarm with RESET button.
5. Disconnect secondary cavity arc detector cable (where applicable). ARC DETECTOR INTERLOCK alarm should light. Reconnect cable. Reset alarm with RESET button.
6. Disconnect tube socket sensor (where applicable). ARC DETECTOR INTERLOCK alarm should light. Reconnect tube socket sensor.
7. Open interlock key switch 1A. CABINET INTERLOCK alarm should light. Close key switch 1A. Reset alarm with RESET button.
8. Pull safety disconnect for 480VAC feed to high voltage power supply primaries.
9. Open front door to high voltage power supply (HVPS). CABINET INTERLOCK alarm should light. Close front door to supply. Reset alarm with RESET button.
10. Open side door tap cover to high voltage power supply (where applicable). CABINET INTERLOCK alarm should light. Close tap cover. Reset alarm with RESET button.
11. Open front door to HVPS. Remove HVPS ground hook from its holder. Close front door to HVPS. CABINET INTERLOCK alarm should remain active (solidly lit, not blinking).

Replace ground hook to holder and re-close HVPS door. Reset alarm with RESET button.

12. Re-open HVPS door, lift wire to high voltage power supply oil level switch (where applicable), and close HVPS door. CABINET INTERLOCK alarm should remain active (solidly lit, not blinking). Re-establish proper connections and re-close HVPS door. Reset alarm with RESET button.
13. Reset safety disconnect for 480VAC feed to high voltage power supply primaries.
14. Remove HPA ground hook from its holder. GROUND HOOK INTERLOCK alarm should light. Replace HPA ground hook.
15. Open CABINET FAN breaker. CABINET (& CAVITY) AIRFLOW alarm should light. Close CABINET FAN Breaker.
16. Open CAVITY BLOWER breaker. CAVITY AIRFLOW alarm should light. Close CAVITY BLOWER breaker.
17. Unplug fiber optic cable from connector A1J1 at back of controller. FO LOOP alarm should light. Reconnect fiber optic cable.
18. Press ARC DETECTOR test button. Light inside test button should change to green color after 5 seconds.
19. Press BODY CURRENT test function button. Body current meter should deflect and light inside test button should change to green color.
20. Press CROWBAR test function button. TRIGGERED light should illuminate.

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**NOTE:** Crowbar should also regularly be tested under high voltage (bleed-off) conditions. Consult Service Bulletin 990611 for more details.

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21. Move HVPS switch on HPA AC distribution panel to OFF position. Press BEAM MODE button. SOFT START INTERLOCK alarm light should light.
22. Press SELECT button in TUBE HIGH VOLTAGE section of panel. High voltage isolation relay should switch state as indicated by CONNECTED and ISOLATED lights on panel.
23. Reset all faults by pressing RESET button.
24. Activate high voltage by pressing BEAM MODE button.
25. Break spade lug connection to thermistor on water cooling outlet pipe in rear of HPA cabinet. COLLECTOR TEMPERATURE alarm should light. Reestablish spade lug connection to thermistor. Press BEAM MODE button to return to beam mode.
26. Activate auto restart function by pressing SELECT button in AUTO RESTART area until ENABLED LED is lit.
27. Simulate a fault by rotating interlock key switch 1A to the bypass position and back to the normal position.

28. High voltage should be interrupted but automatically return after approximately two seconds.
29. Simulate fault with interlock key switch 1A two more times. After third fault, high voltage should not automatically return, and AUTO RESTART function should change to DISABLED state.
30. Press RESET to clear all stored faults.
31. Procedure complete.

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**NOTE:** Most of the metered parameters, such as grid voltage, ion current, reflected power, etc., have electronic trip thresholds inside the HPA controller microprocessor. As such, their trip thresholds should always be correct, provided that the underlying meter calibration is itself correct. Procedures for the calibration of the various meters in the IOX-DCX transmitter are found in other service bulletins published by Comark.

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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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