

Z-Stack MCP and Detector Initial Start-up and Electrical Test Procedure

NOTES: Read the entire start-up procedure before applying any voltages.

Refer to Diagram 1 - Typical Wiring Diagrams - for each detection mode.

The suggested bias voltage for a Resistive Anode Encoder (RAE) is 300 volts.

CAUTION:

Do not exceed 1000V per MCP.

When installing a flange mounted detectors gradually tighten the bolts in a star pattern (DO NOT exceed 20 foot-pounds per bolt). Failure to do so could cause the fiberoptic to crack.

RECOMMENDATIONS:

For optimal lifetime, operate the detector at the minimum voltage necessary to obtain a useable signal.

Do not operate the phosphor screen at a higher than recommended potential.

PROCEDURE

Make all connections to the assembly. Check all electrical connections for possible shorted or open circuits.

Pump down to $\leq 2 \times 10^{-6}$ torr and hold for at least 15 hours.

VOLTAGE APPLICATION

Electron/Negative Ion/UV Photon Detection: (for a metal anode or Resistive Anode Encoder, skip to section below)

Phosphor Screen

Ground the input of the assembly (V_i). Apply voltage to the phosphor screen (V_a) in +250V, 1 minute increments. Stop at +1.0 kV.

Apply voltage to the output of the assembly (V_o) in +100V, 2 minute increments. Stop at +1.5 kV.

Increase the voltage to V_a in +100V, 5 minute increments to +3.0 kV. Wait 5 minutes.

Increase the voltage to V_a in +100V, 10 minute increments to +4.5 kV. Wait 5 minutes.

Simultaneously increase the voltage to V_a and V_o in +100V, 10 minute increments to +5.2 kV at V_a and +2.2 kV at V_o .

For screens requiring a 5.0 kV potential - Increase the voltage to V_a in +100V, 10 minute increments to +6.2 kV. Wait 10 minutes.

For screens requiring a 5.0 kV potential - Increase the voltage to V_a in +50V, 10 minute increments to +7.2 kV. Wait 10 minutes.

Simultaneously increase the voltage to V_a and V_o in +50V, 10 minute increments to +3.0 kV at V_o .

When through using the detector, turn off the voltage to V_a . When the voltage drops below +3.0 kV, turn off the voltage to V_o .

Metal Anode/Resistive Anode Encoder

Ground the input of the assembly (V_i). Apply the specified anode bias to V_a .

Increase the voltage to both V_a and V_o in +100V, 2 minute increments by +1.5 kV at V_a and to +1.5 kV at V_o . Wait 5 minutes.

Increase the voltage at V_o and V_a in +100V, 5 minute increments to +1.5 kV at V_o . Wait 10 minutes.

Increase the voltage at V_o and V_a in +50V, 5 minute increments to +3.0 kV at V_o .

When through using the detector, turn off the voltages to V_o and V_a .

Positive Ion/UV Photon Detection (for a metal anode or Resistive Anode Encoder, skip to section below).

Phosphor Screen

Ground the output of the assembly (V_o). Apply voltage to the phosphor sheen (V_a) in +250V, 1 minute increments. Stop at +1.0 kV.

Apply voltage to the input of the assembly (V_i) in -100V, 2 minute increments. Stop at -1.5 kV.

Increase the voltage to V_a in +100V, 5 minute increments to +2.0 kV. Wait 5 minutes.

Increase the voltage to V_a in +100V, 10 minute increments to +3.0 kV. Wait 5 minutes.

Adjust the voltage to V_i in -100V, 10 minute increments to -2.2 kV.

For screens requiring a 5.0 kV potential - Increase the voltage to V_a in +100V, 10 minute increments to +4.0 kV. Wait 10 minutes.

For screens requiring a 5.0 kV potential - Increase the voltage to V_a in +50V, 10 minute increments to +5.0 kV. Wait 10 minutes.

Adjust the voltage to V_i in -50V, 10 minute increments to -3.0 kV.

When through using the detector, turn off the voltages to the V_i and V_a .

Metal Anode/Resistive Anode Encoder

Ground the output of the assembly (V_o). Apply the specified anode bias to V_a .

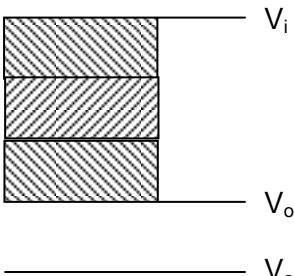
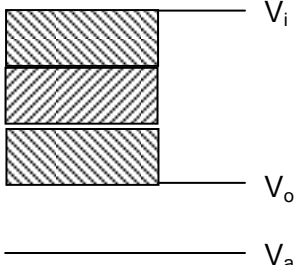
Apply voltage to V_i in -100V, 2 minute increments. Stop at -2.2 kV. Wait 2 minutes.

Adjust the voltage at V_i in -100V, 5 minute increments to -2.2 kV. Wait 5 minutes.

Adjust the voltage at V_i in -50V, 10 minute increments to -3.0 kV.

When through using the detector, turn off the voltages to V_i and V_a .

TYPICAL WIRING DIAGRAMS

	Pulse Mode (metal anode)	Imaging Mode (phosphor screen)
Electron/Negative Ion/UV		
	ground	ground
	3000V	3000V
	3050V to 3500V	6000V to 8000V
Positive Ion/UV Photon		
	-3000V	-3000V
	ground	ground
	50V to 500V	3000V to 5000V