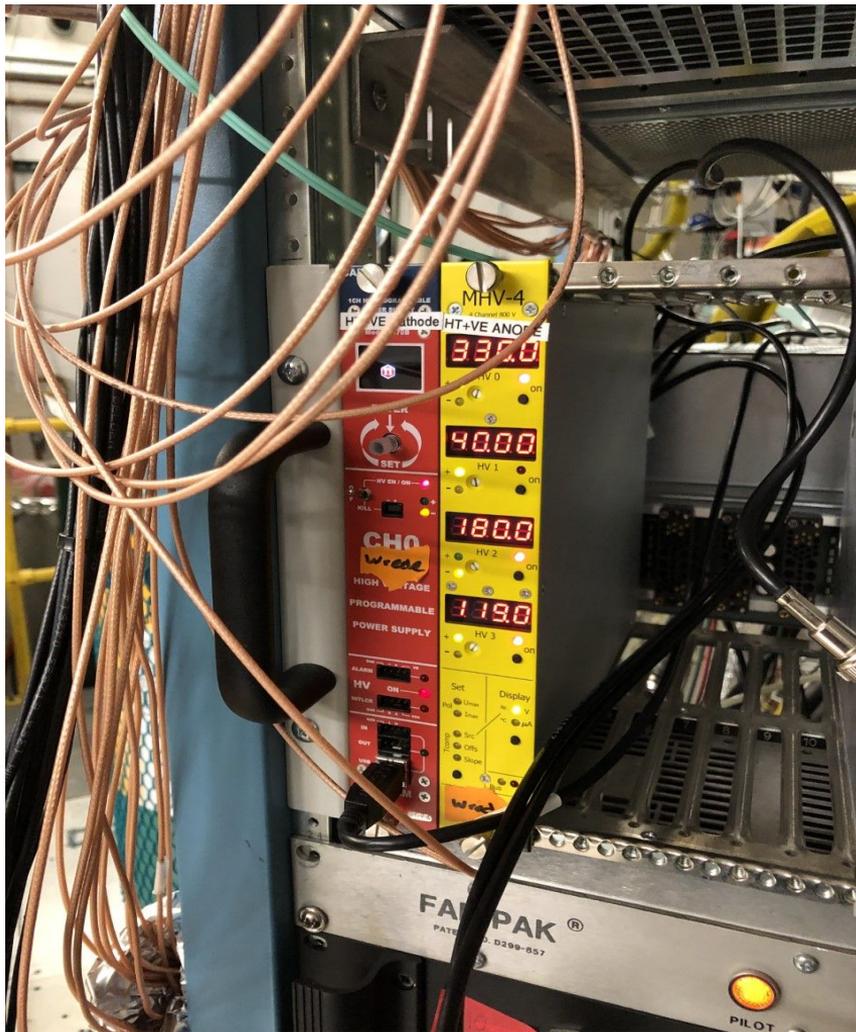


CAEN 1CH HV Programmable Power Supply

- Powers the field cage
- Power button/kill switch
- Normally set to -6 kV
- Caution:
 - To avoid sparking, only turn on when there is gas in the detector at operating pressure (or in vacuum)
 - Voltage must ramp up slowly (~ a few minutes)
 - Adjust ramping speed by clicking and turning toggle (should already be set)
- Once on, there is typically no need to adjust voltage





Mesytec MHV-4 4CH HV Power Supply

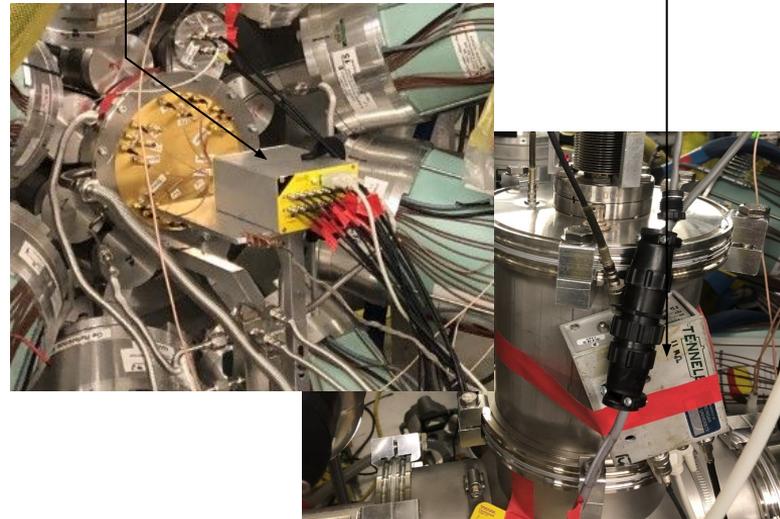
- Powers:
 - Micromegas (~380 V)
 - Silicon Detector (25-50 V)
 - Needs to be under vacuum to bias
 - Gating Grid (~225/150 V)
 - Pos/neg V indicated by yellow light
- Power button
 - Red light indicates whether bias is on/off
- Set voltage by turning screw
 - Voltage will ramp-up on its own
- Toggle between voltage and current
 - If current gets too high during ramp-up it will beep and ramp-down

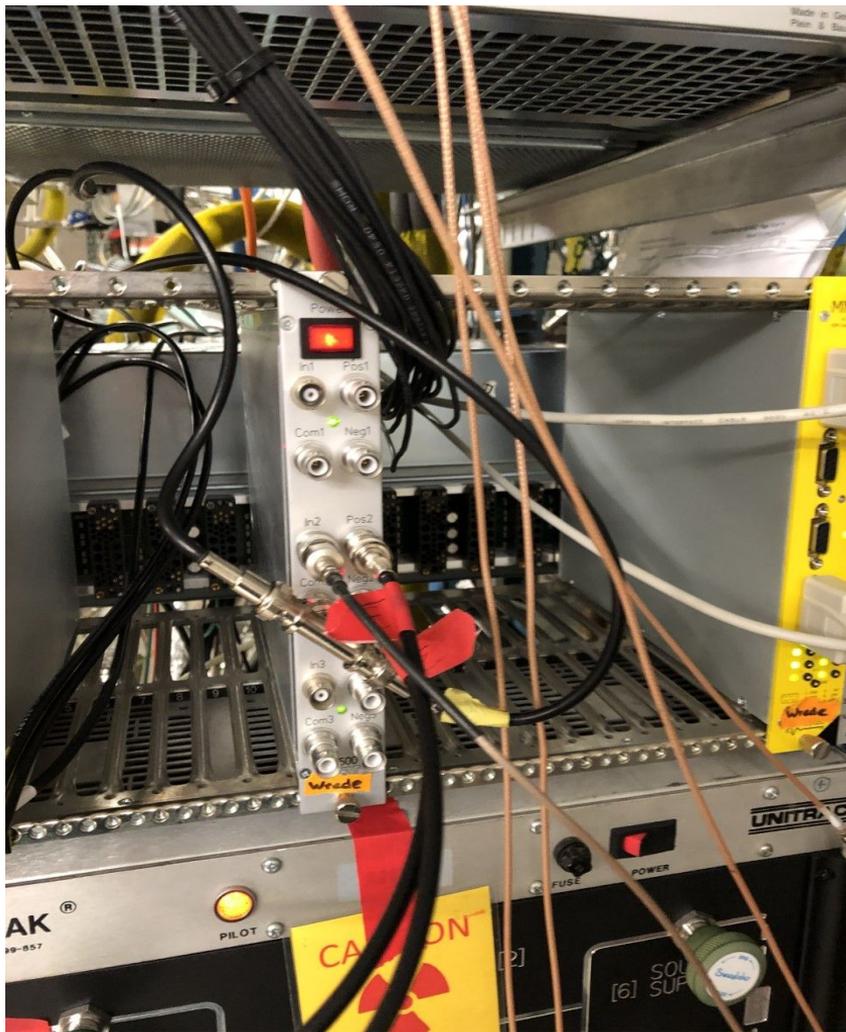




Mesytec MNV-4 4CH HV Power Supply

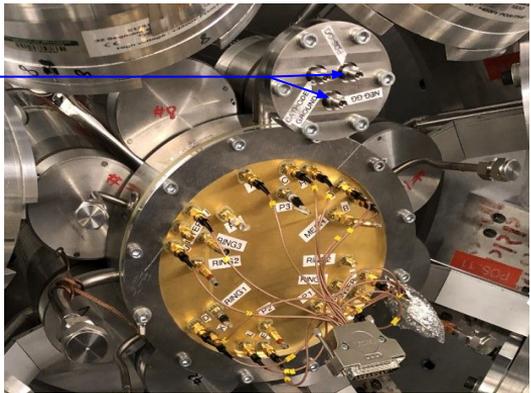
- Powers:
 - Micromegas Preamplifier
 - Obsolete for GADGET II
 - Silicon Detector Preamplifier



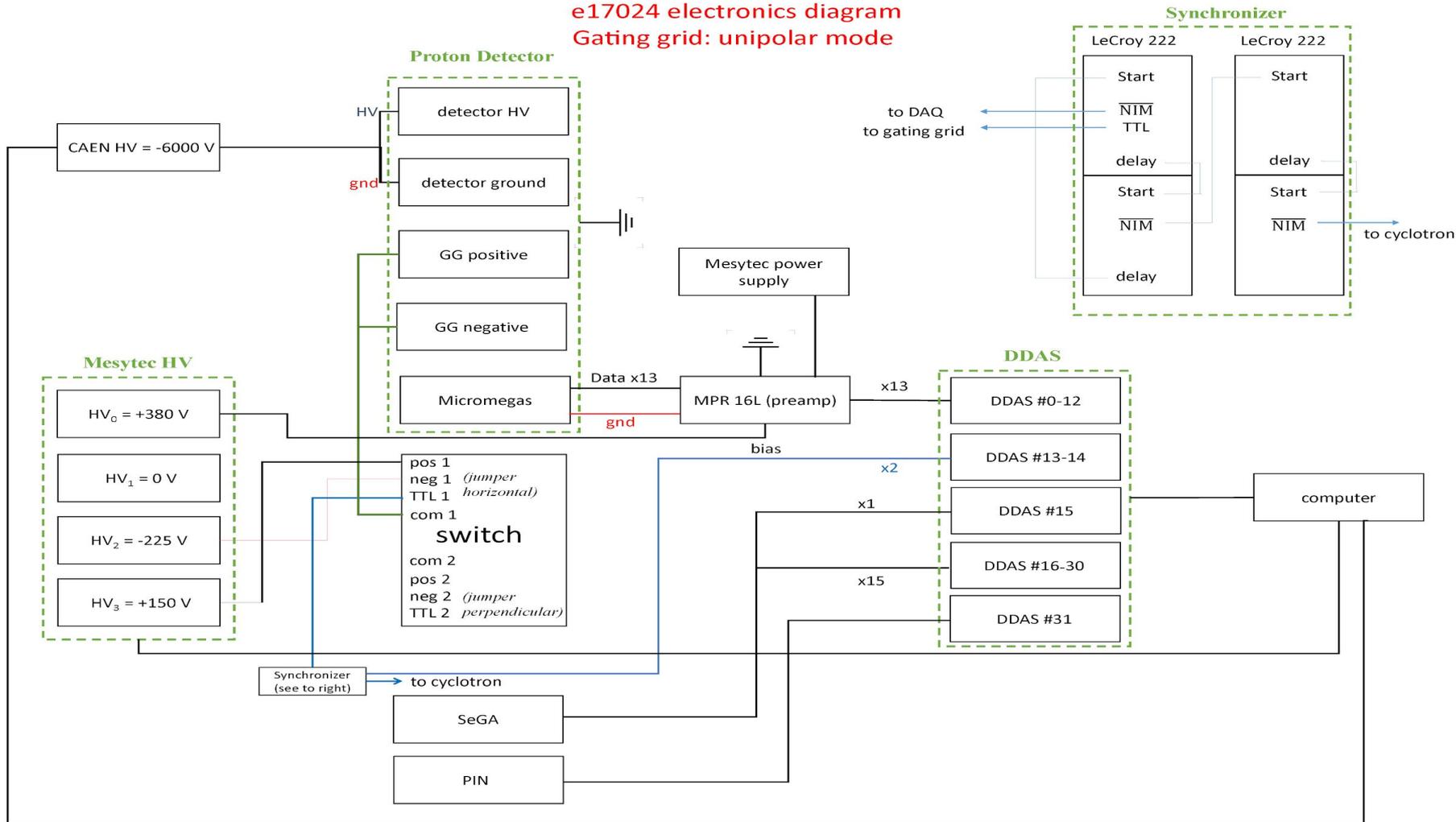


AMX500-3 Universal Digital-Controlled Triple Analog Switch

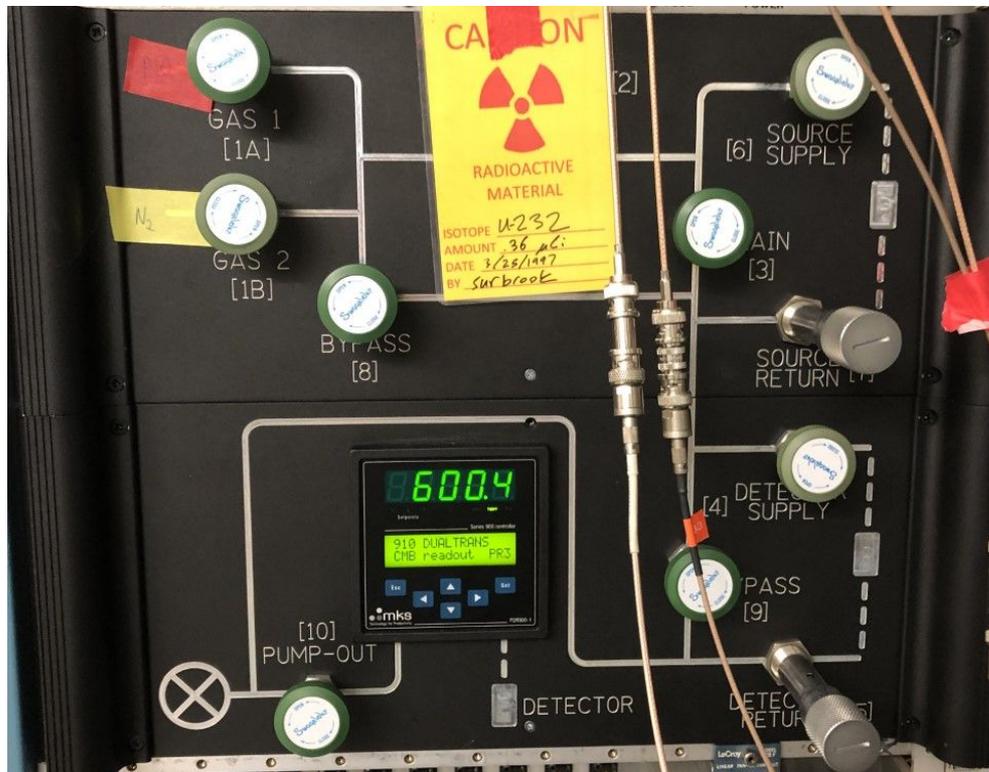
- Switches between gating grid voltages
- Pos/neg voltages from Mesytec MHV-4 module connect to pos/neg inputs
 - See schematic on next slide
- Timing signal goes into In input
- Split signal from com output and run cables to detector feed-through



e17024 electronics diagram
Gating grid: unipolar mode

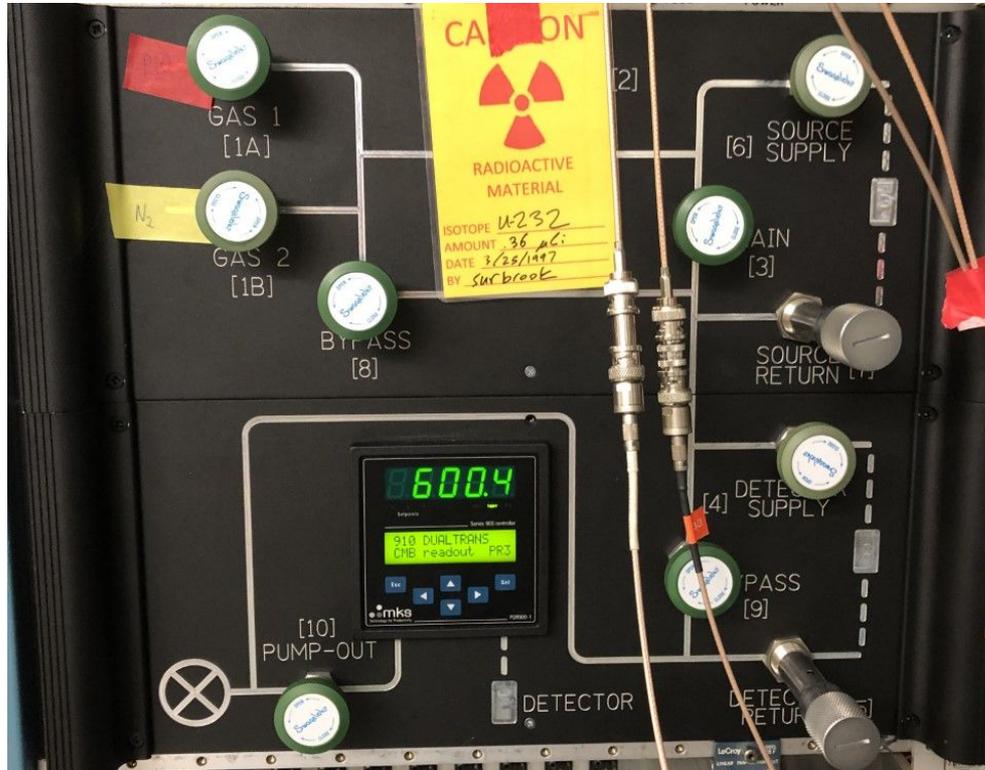


Gas Handling System schematic on slide 10



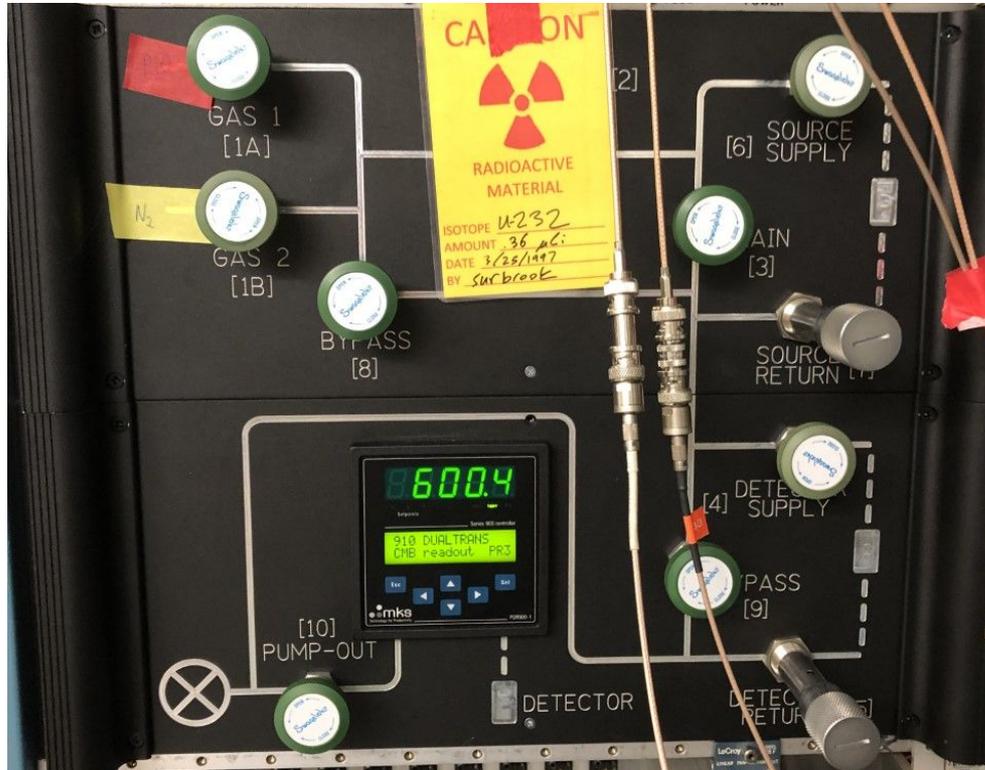
- PUMP GHS
 - a. Check that voltages are off (cathode, gating grid, and MM)
 - b. Valves (0a,0b,4,5,9,10) closed, (1a,1b,3,6,7,8) open
 - c. Turn off mass-flow controller or set to zero pressure
 - d. Turn on pump
 - e. Open valve 9

Gas Handling System schematic on slide 10



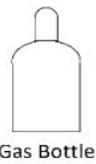
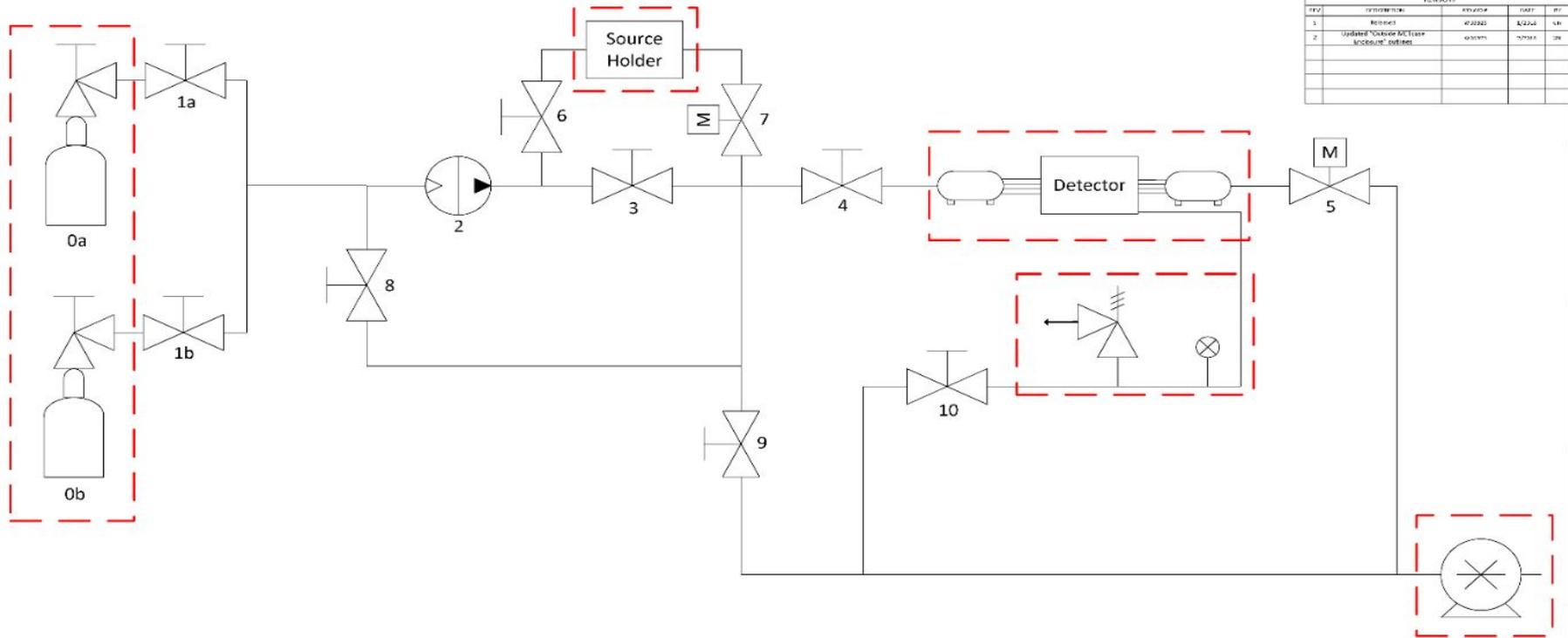
- PUMP DETECTOR
 - a. Follow procedure to pump GHS
 - b. Valves (0a,0b,4,5,10) should be closed, and valves (1a,1b,3,6,7,8,9) open
 - c. Open Valve 5 for slow pumping
 - d. When pressure in chamber goes below 200 Torr, open valves 4 and 10

Gas Handling System schematic on slide 10

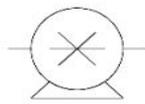


- FLOW GAS THROUGH THE DETECTOR
 - a. Follow instructions for pumping GHS and detector
 - b. Close valves (0a,0b,1a,1b,5,6,7,8,9,10). Valves (3,4) should be open
 - c. Re-check voltages off (cathode, gating grid and Micromegas)
 - d. Set mass-flow controller to the desired pressure
 - e. Open valve 0a or 0b, then open valve 1a or 1b
 - f. Adjust valve 5 to allow the desired flow rate

| REVISIONS | | | | |
|-----------|---|------------|---------|-----|
| REV | DESCRIPTION | REVISED BY | DATE | APP |
| 1 | Release | WJ2020 | 3/22/20 | LN |
| 2 | Updated Vacuum P/L Loop procedure outline | WJ2020 | 7/25/20 | LN |
| | | | | |
| | | | | |
| | | | | |



Gas Bottle



Vacuum Pump



Mass Flow Controller



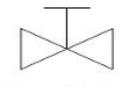
Manifold



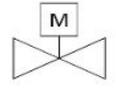
Pressure Gauge



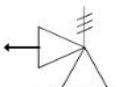
Manual Angle Valve



Manual Valve



Metering Valve



Relief Valve



Outside METcase Enclosure

NOTE: All components will be housed in two 19" METcase 4U enclosures unless otherwise stated

| | |
|---|-----------------------|
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| Project Manager | Dr. Robert W. Egelund |
| Project Engineer | Dr. Robert W. Egelund |
| Project Scientist | Dr. Robert W. Egelund |
| Project Technician | Dr. Robert W. Egelund |
| Project Operator | Dr. Robert W. Egelund |
| Project Support | Dr. Robert W. Egelund |
| Project Safety | Dr. Robert W. Egelund |
| Project Quality | Dr. Robert W. Egelund |
| Project Compliance | Dr. Robert W. Egelund |
| Project Security | Dr. Robert W. Egelund |
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| Project Environmental | Dr. Robert W. Egelund |
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Activate W

