# Voltage Controls for CPP

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Voltages for CPP

- FMWPC low voltages
  - 24 channels, 4 per chamber (includes both +5V and -5V)
  - Coming from Wiener MPV8008
- FMWPC high voltages
  - Only 6 HV channels from CAEN A1550 boards, one per chamber.
- CTOF high voltage
  - 8 HV channels, 2 channels per chamber from CAEN A1535 boards.
- All of this hardware have been used in GlueX
  - No new drivers required
  - CPP GUIs have the same feel and look as other GlueX HV GUIs.
- Need to integrate voltage controls in Hall D EPICS framework.
  - Status in this presentation

Main CPP voltage GUI

- FMWPC and CTOF share the same voltage screen

- Voltage and current readbacks for all channels are shown.

- The buttons for group operations are similar to other GlueX subsystems.
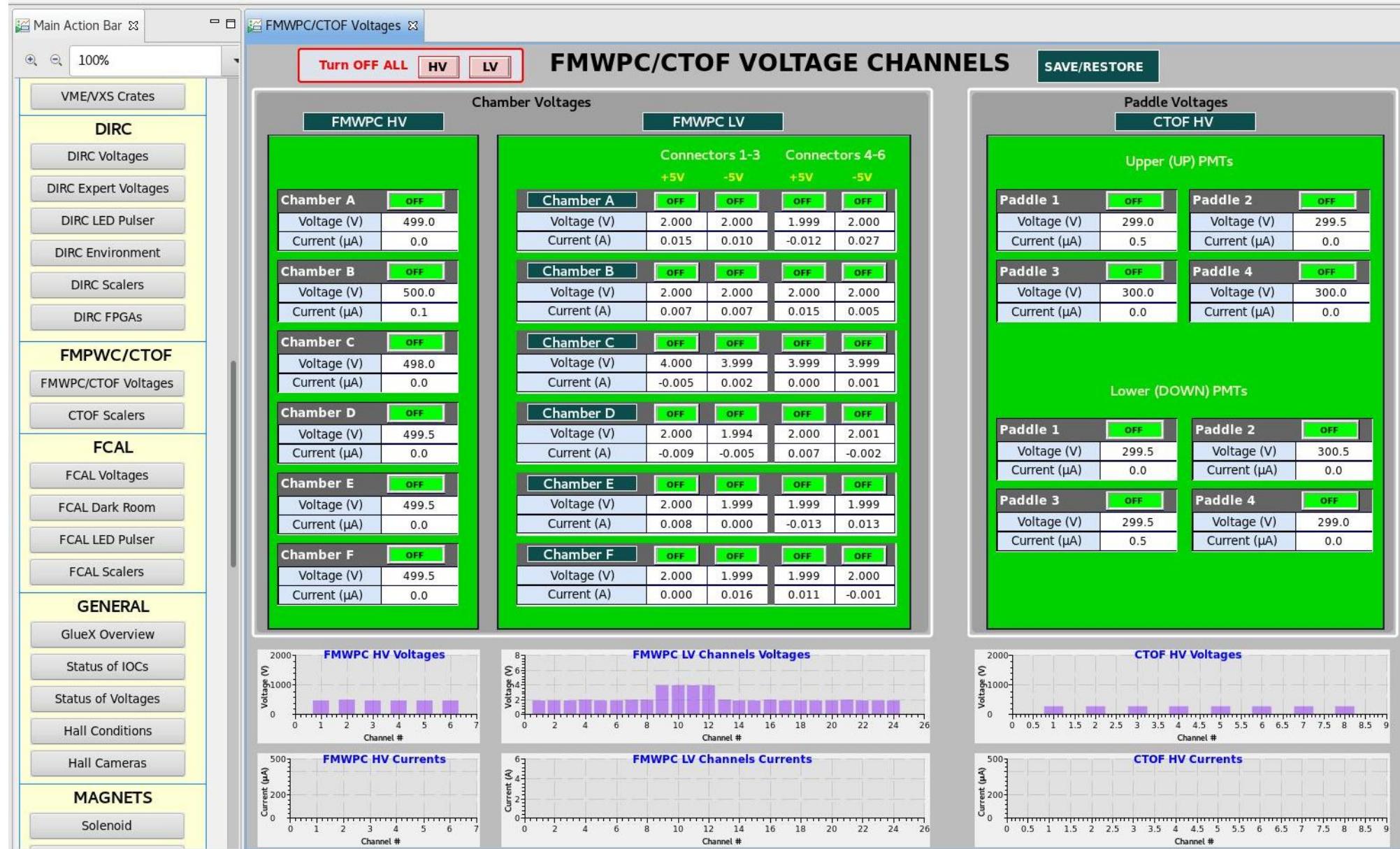
Voltage Channels

FMWPC Chamber A LV Channels

FMWPC: Chamber A LV Channels

Channel Name	Crate Slot Channel #	Measured Sense Voltage	Measured Terminal Voltage	Voltage Setpoint	Voltage Setpoint Readback	LV ON/OFF	Channel Status	Measured Current	Max Current Setpoint	Max Current Readback	Trip Current Setpoint	Trip Current Readback	Max Sens Voltage Setpoint	Max Sens Voltage Readback	Max Term Voltage Setpoint	Max Term Voltage Readback	Max EPICS Voltage	Ramp Up Rate Setpoint	Ramp Up Rate Readback	Ramp Down Rate Setpoint	Ramp Down Rate Readback	Clear Events and Turn Off
FMWPC:lv:A:C1_C3:p	D2-5-MID:300	2.000	2.000	2	2.000	OFF	On	0.015	2	2.000	2.2	2.200	7.8	7.800	8	8.000	9	5	5	5	5	
FMWPC:lv:A:C1_C3:n	D2-5-MID:301	2.000	2.000	2	2.000	OFF	On	0.010	2	2.000	2.2	2.200	7.8	7.800	8	8.000	9	5	5	5	5	
FMWPC:lv:A:C4_C6:p	D2-5-MID:302	1.999	1.999	2	2.000	OFF	On	-0.012	2	2.000	2.2	2.200	7.8	7.800	8	8.000	9	5	5	5	5	
FMWPC:lv:A:C4_C6:n	D2-5-MID:303	2.000	2.000	2	2.000	OFF	On	0.027	2	2.000	2	2.000	7.8	7.800	8	8.000	9	5	5	5	5	

CSS

CTOF HV channels

CTOF: ALL HV channels

Channel Name	Crate Slot Channel #	Measured Voltage (V)	Voltage Setpoint (V)	Voltage Setpoint Readback	HV ON/OFF	Channel Status	Measured Current (µA)	Trip Current Setpoint	Trip Current Readback	Trip Timeout Setpoint	Trip Timeout Readback	Max Voltage Setpoint	Max Voltage Readback	Max Hardware Voltage	Max EPICS Voltage	Ramp Up Rate Setpoint	Ramp Up Rate Readback	Ramp Down Rate Setpoint	Ramp Down Rate Readback
CTOF:hv:UP:1	D2-8-MID:2:0	298.5	300	300.0	OFF	On	0.5	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:UP:2	D2-8-MID:2:1	300.5	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:UP:3	D2-8-MID:2:2	299.5	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:UP:4	D2-8-MID:2:3	299.0	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:DN:1	D2-8-MID:2:4	299.0	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:DN:2	D2-8-MID:2:5	299.5	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:DN:3	D2-8-MID:2:6	299.5	300	300.0	OFF	On	0.5	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60
CTOF:hv:DN:4	D2-8-MID:2:7	299.5	300	300.0	OFF	On	0.0	800	800.0	1	1.0	2,400	2,400.0	3,574.0	2,800	60	60	60	60

Can control every parameter of LV and HV channels from these channel lists if grouped operations are too broad in scope.

GlueX voltage status GUI

- CTOF and FMWPC voltage status is shown separately on the GlueX voltage status GUI.
- Can open the main voltage GUI from either one of the buttons.

Alarms for FMWPC and CTOF

- CTOF and FMWPC each have their separate branch on the alarm tree.

- Can open the main voltage GUI from the top of the branch.

- An open the channel GUI from the bottom of the branch.

Summary

- EPICS IOC for CPP voltages is ready based on the channel map from Nick
  - IOC status will be available in the IOC status GUI in EPICS
- Voltage GUIs are ready to be used.
- Save/Restore functionality is ready.
- Alarm system for voltages is ready.
- I have not yet requested EPICS archiving of the voltage channels.
- Everything needs to be tested to check miscabling or other errors.