JLab Prototype RTP HV Driver Installation Timeline

October 30, 2024

Friday September 13, 2024:

1. Bench Test in TL 1137: ePAS sign in, Pre-Job Brief, and MSD
2. Measure rise time, ringing, and circular polarization and document results – Matt and Shukui
3. Kent visit: measure rise time in TL 1137

Week of September 16, 2024:

Monday

1. Start long burn-in at operating frequency (15 Hz then 960 Hz) and voltages – Steve, Jim
2. Rewire of xport fiber converter chassis – Jim

Tuesday

1. CEBAF Laser Room Planning Walk-thru – Riad, Shukui, Jim
    1. Where to put drivers on laser table
    2. Where to install xpot in rack
    3. How / where to re-route fibers, com cables, power cables
    4. What goes where, who will do

Wednesday

1. Kent visit: measure rise time in TL 1137

Thursday

1. Team review of planning and ePAS

Friday

1. CEBAF Laser Room Planning Walk-thru – Riad, Shukui, Steve
    1. Measure rise time, ringing, and circular polarization of UVA Prototype RTP and document results
    2. Carefully plan connection process of RTP to JLab Prototype drivers

Week of September 23, 2024:

Monday

1. Slowed down transition time – Steve

Tuesday

1. Uploaded new firmware to Helicity Generator Board to provide Hel and nHel signals in laser room – ePAS and ATLis approved (Riad, Ed)

Weeks of September 30 – October 21, 2024:

1. General installation ePAS and ATLis – On Issue – Riad
2. Optimize rise time (10 µs) and ringing (<1%): find output and gate resistors and output inductance
3. Screen updates – Jim
4. Follow-up on software operation in Accelerator – Jim
5. non-NRTL inspection and QR sticker, add plastic cover to metal box – Jim
6. Plan to measure RTP eight applied HVs from UVA Prototype – ePAS and ATLis – On Issue (Jim)
7. Measure applied HV to RTP in TL 1137. Is there any cross-talk? Jim
8. Plan to provide electrical ground to rack in laser room - Jim
9. Provide electrical ground to floating PCB – use BNC cable to electrical helicity output. MOLLER might use to check ground loops.
10. Add an option to connect two floating grounds: metal box and PCB

11. Plan for interchangeable resistors (gate and output) and capacitors on new PCB
12. Plan to measure IA rise time. Scope is very hard, instead use parity DAQ
13. Add a Windows laptop to bench in TL 1137

Week of October 28, 2024:

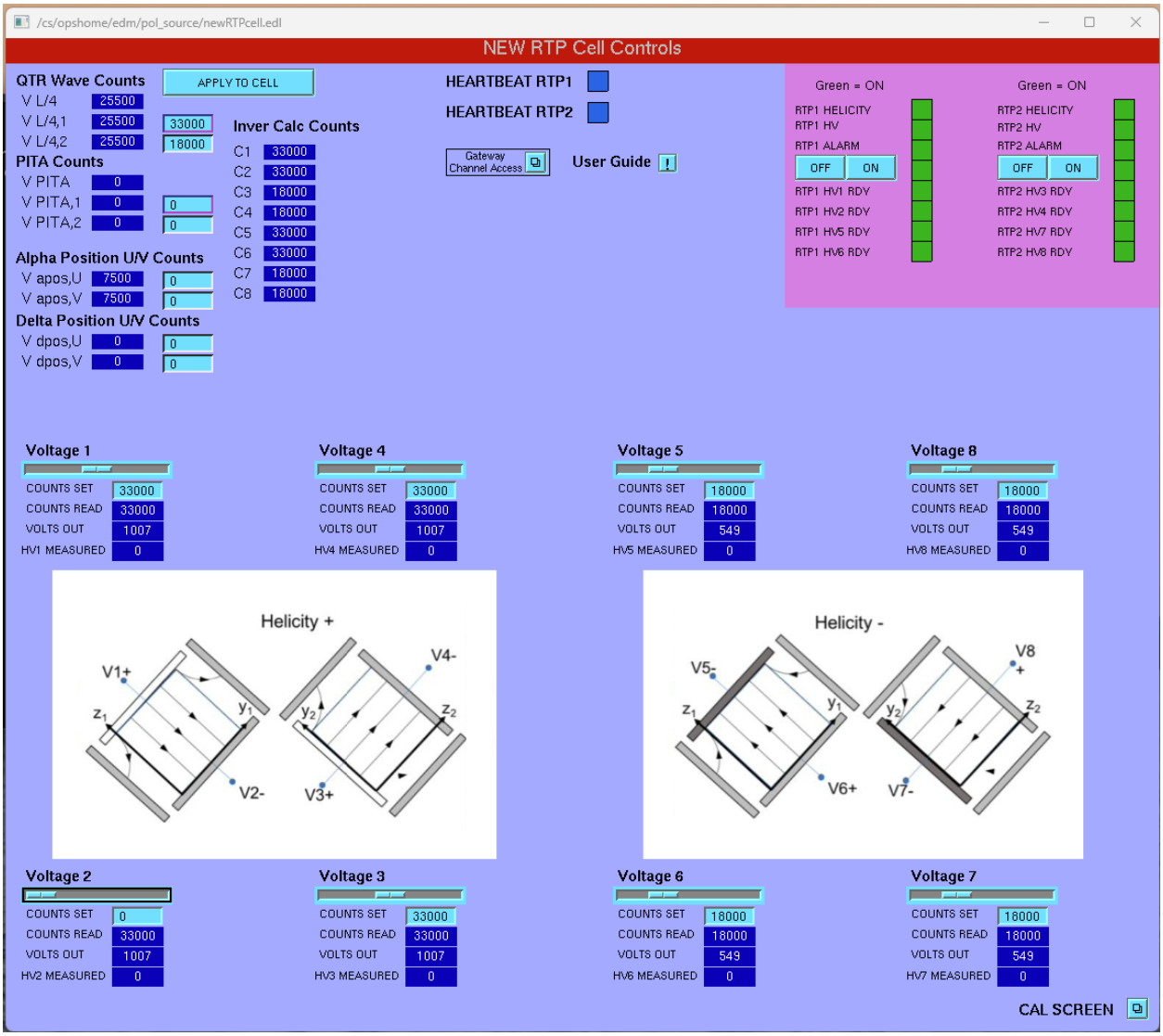
1. Measure RTP eight applied HVs from UVA Prototype
2. Provide electrical ground to rack in laser room
3. Install xport controller chassis
4. Ethernet cables pull to xport controller chassis
5. Route comms fibers from controller to drivers on laser table
6. Test EPICS controls in laser room

Wednesday November 6, 2024: Installation of JLab Prototype for one day

1. Measure UVA Prototype driver rise time, ringing, and circular polarization and document results
2. Cut off HV cables to RTP cell, re-connect to UVA Prototype HV drivers and measure again
3. Install and connect JLab Prototype drivers
4. Set drivers to operational voltages
5. Measure JLab Prototype driver rise time, ringing, and circular polarization and document results
6. Disconnect JLab Prototype, reconnect UVA Prototype
7. Measure UVA Prototype driver rise time, ringing, and circular polarization and document results

Week of December 17, 2024: Installation of JLab Production Drivers

1. Disconnect UVA Prototype, connect JLab Prototype
2. Measure electrical pickup in laser room and ISB using Parity DAQ – MOLLER Collaboration



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NEW RTP Cell Controls

QTR Wave Counts

APPLY TO CELL

V L/4	25500	
V L/4,1	25500	33000
V L/4,2	25500	18000

PITA Counts

V PITA	0	
V PITA,1	0	0
V PITA,2	0	0

Alpha Position U/V Counts

V apos,U	7500	0
V apos,V	7500	0

Delta Position U/V Counts

V dpos,U	0	0
V dpos,V	0	0

Inver Calc Counts

C1	33000
C2	33000
C3	18000
C4	18000
C5	33000
C6	33000
C7	18000
C8	18000

HEARTBEAT RTP1

HEARTBEAT RTP2

Gateway Channel Access

User Guide

Voltage 1

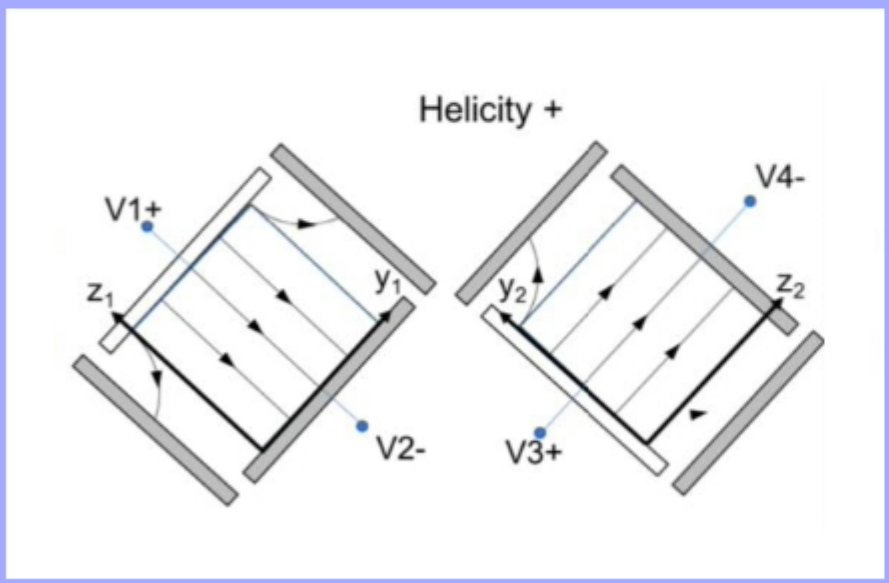
COUNTS SET	33000
COUNTS READ	33000
VOLTS OUT	1007
HV1 MEASURED	0

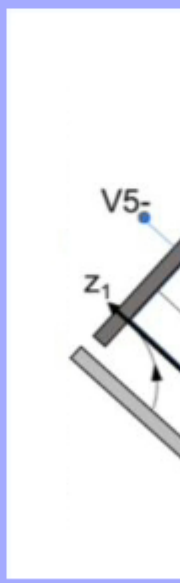
Voltage 4

COUNTS SET	33000
COUNTS READ	33000
VOLTS OUT	1007
HV4 MEASURED	0

Voltage 5

COUNTS SET	180
COUNTS READ	180
VOLTS OUT	54
HV5 MEASURED	0





Voltage 2

COUNTS SET	0
COUNTS READ	33000
VOLTS OUT	1007
HV2 MEASURED	0

Voltage 3

COUNTS SET	33000
COUNTS READ	33000
VOLTS OUT	1007
HV3 MEASURED	0

Voltage 6

COUNTS SET	180
COUNTS READ	180
VOLTS OUT	54
HV6 MEASURED	0