

# JLab Prototype RTP HV Driver Installation Timeline

November 7, 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  $\mu$ s) and ringing (<1%): find output and gate resistors and output inductance
3. Screen updates – Jim
4. non-NRTL inspection and QR sticker, add plastic cover to metal box – Jim
5. Plan to measure RTP eight applied HVs from UVA Prototype – ePAS and ATLis – On Issue (Jim)
6. Measure applied HV to RTP in TL 1137. Is there any cross-talk? Jim
7. Provide electrical ground to floating PCB – use BNC cable to electrical helicity output. MOLLER might use to check ground loops.
8. Add an option to connect two floating grounds: metal box and PCB
9. Plan for interchangeable resistors (gate and output) and capacitors on new PCB
10. Plan to measure IA rise time. Scope is very hard, instead use parity DAQ
11. 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
7. Check Kent's training

## **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

**NEW RTP Cell Controls**

**QTR Wave Counts** APPLY TO CELL

V L/4

V L/4,1

V L/4,2

**PITA Counts**

V PITA

V PITA,1

V PITA,2

**Alpha Position U/V Counts**

V apos,U

V apos,V

**Delta Position U/V Counts**

V dpos,U

V dpos,V

**Inver Calc Counts**

C1

C2

C3

C4

C5

C6

C7

C8

HEARTBEAT RTP1

HEARTBEAT RTP2

Gateway Channel Access

User Guide

Green = ON

RTP1 HELICITY	<input type="checkbox"/>	RTP2 HELICITY	<input type="checkbox"/>
RTP1 HV	<input type="checkbox"/>	RTP2 HV	<input type="checkbox"/>
RTP1 ALARM	<input type="checkbox"/>	RTP2 ALARM	<input type="checkbox"/>
<input type="button" value="OFF"/> <input type="button" value="ON"/>		<input type="button" value="OFF"/> <input type="button" value="ON"/>	
RTP1 HV1 RDY	<input type="checkbox"/>	RTP2 HV3 RDY	<input type="checkbox"/>
RTP1 HV2 RDY	<input type="checkbox"/>	RTP2 HV4 RDY	<input type="checkbox"/>
RTP1 HV5 RDY	<input type="checkbox"/>	RTP2 HV7 RDY	<input type="checkbox"/>
RTP1 HV6 RDY	<input type="checkbox"/>	RTP2 HV8 RDY	<input type="checkbox"/>

**Voltage 1**

COUNTS SET

COUNTS READ

VOLTS OUT

HV1 MEASURED

**Voltage 4**

COUNTS SET

COUNTS READ

VOLTS OUT

HV4 MEASURED

**Voltage 5**

COUNTS SET

COUNTS READ

VOLTS OUT

HV5 MEASURED

**Voltage 8**

COUNTS SET

COUNTS READ

VOLTS OUT

HV8 MEASURED

**Helicity +**

**Helicity -**

**Voltage 2**

COUNTS SET

COUNTS READ

VOLTS OUT

HV2 MEASURED

**Voltage 3**

COUNTS SET

COUNTS READ

VOLTS OUT

HV3 MEASURED

**Voltage 6**

COUNTS SET

COUNTS READ

VOLTS OUT

HV6 MEASURED

**Voltage 7**

COUNTS SET

COUNTS READ

VOLTS OUT

HV7 MEASURED

CAL SCREEN