

# **BigBite Timing Hodoscope: Manual for JLab Hall A Shifter Workers**

A condensed set of instructions for operation and maintenance of the BigBite Timing Hodoscope detector. For questions, please contact an expert, either Ralph Marinaro [r.marinaro.1@research.gla.ac.uk](mailto:r.marinaro.1@research.gla.ac.uk), Rachel Montgomery at [rachel.montgomery@glasgow.ac.uk](mailto:rachel.montgomery@glasgow.ac.uk), or send an email to David Hamilton [david.j.hamilton@glasgow.ac.uk](mailto:david.j.hamilton@glasgow.ac.uk), or contact by sending an email to Gary Penman [g.penman.1@research.gla.ac.uk](mailto:g.penman.1@research.gla.ac.uk).

Created by Ralph Marinaro and Rachel Montgomery.

Fall of 2021 – first version.

Updates will be made in accordance with changes made to the detector and data acquisition system as the SBS experiment run groups progress.

# USE THIS CHEAT SHEET FIRST!!!!

## How To Turn On/Off Timing Hodosocpe HV

### READ WHOLE PAGE BEFORE STARTING

- ssh [bbhodo@tedbbdaq](mailto:bbhodo@tedbbdaq), password: D4q!23
- telnet bbth-hv 1527 (hit any key to go to login)
  - username: BBhodo (hit enter)
  - password: bbhodo19 (hit enter)
- Use arrow keys, enter key, tab key, and space bar to navigate
- Cursor (<sup>rectangle</sup>~~red square~~) will show up on "Main", hit enter
- Cursor (<sup>rectangle</sup>~~red square~~) will show up on "Channels", hit enter
- Cursor (<sup>rectangle</sup>~~black square~~) will show up, use arrow keys to move to "Pw" column, and row "HV\_BBhodo\_0", hit space bar to change from "On" to "Off" and vice versa.
  - if "On" then all individual channels under that primary channel will show >0V in "VMon" column, if "Off" then all individual channels under that primary channel will show 0V in "VMon" column
  - you **DO NOT** need to turn off every individual channel under the primary channel since primary controls all the individual channels
- Use down arrow key to scroll to row "HV\_BBhodo\_1", do the same ON/OFF with space bar in the "Pw" column as with the first primary channel
- Repeat previous step for row "HV\_BBhodo\_2" and "HV\_BBhodo\_3"
- Primary channels are separated by 48 individual channels, **DO NOT** touch these individual channels with row label "hodo"
- **ONLY** turn ON/OFF primary channels with label "HV\_Bbhodo"
- **DO NOT** touch columns "V0Set", "I0Set", or any other column other than "Pw" only for the primary channels

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a. Via Controlled Access	

## **A.1 How to Troubleshoot the Detector:**

If one or a few channels appear to go missing, or become noisy, and the proposed solution requires a controlled access, then simply make a log entry on halog, and we will wait until the next planned access from the RC. If a whole NINO card worth of channels go missing, or are noisy, or the whole side of one side of the detector, or the whole detector itself, then first check the LV, HV, DAQ, and if necessary, contact an expert, and leave it up to their discretion for how to proceed.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>No Hits</b>	<b>Low Voltage OFF</b>	<b>Turn On the Low Voltage**</b>
	<b>High Voltage OFF</b>	<b>Turn On the High Voltage*</b>
	<b>DAQ Errors</b>	<b>Contact Expert (by phone)</b>

	One Channel (Bad Connection)	Contact Expert (by email)
Missing/Noisy Channel(s)	16 Channels (Bad NINO)	Contact Expert (by email)
	All Channels (Bad Repeater)	Contact Expert (by phone)
High/Low Rate	High Voltages set too High/Low	Check settings of High Voltage
	NINO thresholds set too High/Low	Contact Expert (by email)

\*\* Requires controlled access, no remote control through telnet or EPICs

\* Check on telnet first, then consider controlled access

## **To Troubleshoot EPICs:**

1. Make sure that there is a backup or documentation of the current HV settings.

2. Logon to aslow@adaqsc and type

```
telnet localhost 20000  
exit
```

3. Verify that EPICS server restarts. A lot of stuff should be printed out. If there are what appear to be errors, contact Steve Wood.

4. Exit the telnet session with Ctrl-] q

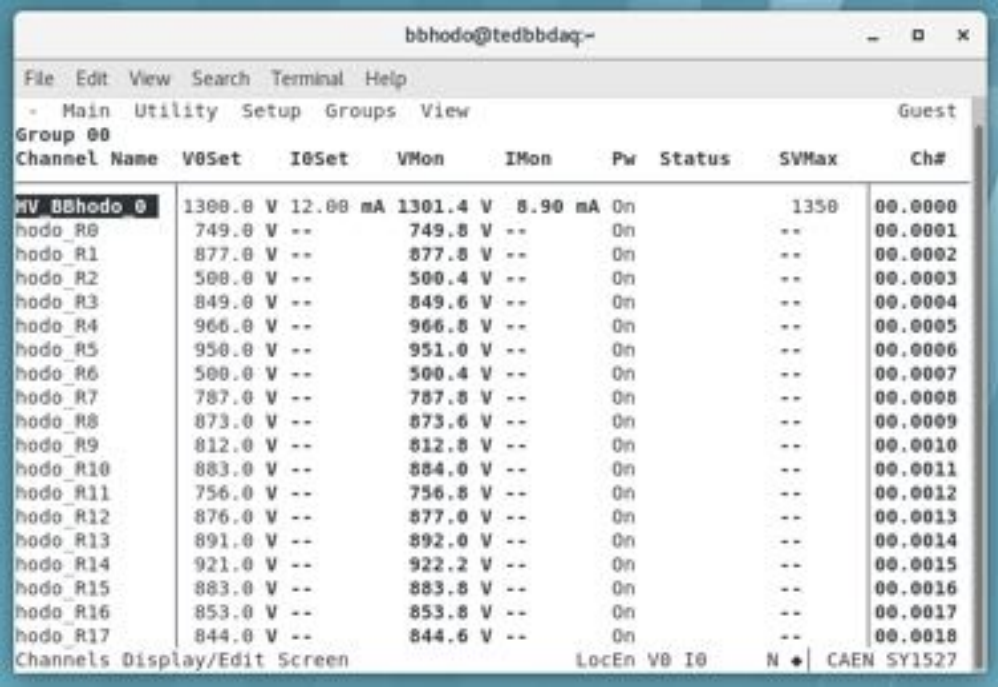
5. Verify that the HV settings are correct and adjust if not.

## B.1 How to Check the High Voltage Values:

a. Using telnet to the check the high voltage values:

- To telnet into the high voltage main frame from the command line type:
  - ssh bbhodo@tedbbdaq (check counting house white board for username/password)
  - telnet bbth-hv 1527  
(check counting house white board for username/password)

Use keyboard arrows, tab key, enter key, and space bar to maneuver through the channels, navigate to Main, hit enter, navigate to Channels, hit enter, navigate through the columns and rows to the Pw column only (refer to cheat sheet above)



The screenshot shows a terminal window titled 'bbhodo@tedbbdaq-' with a menu bar (File, Edit, View, Search, Terminal, Help) and a sub-menu (Main, Utility, Setup, Groups, View). The main display shows a table of high voltage channels. The first row is highlighted, showing 'HV BBhodo 0' with values: 1300.0 V, 12.00 mA, 1301.4 V, 8.90 mA, On, 1350, 00.0000. Subsequent rows show channels hodo\_R0 through hodo\_R17 with similar data. At the bottom, there is a status bar with 'Channels Display/Edit Screen', 'LocEn VB IO', 'N', and 'CAEN SY1527'.

Channel Name	V0Set	I0Set	VMon	IMon	Pw	Status	SVMax	Ch#
HV BBhodo 0	1300.0 V	12.00 mA	1301.4 V	8.90 mA	On		1350	00.0000
hodo_R0	749.0 V	--	749.8 V	--	On		--	00.0001
hodo_R1	877.0 V	--	877.8 V	--	On		--	00.0002
hodo_R2	500.0 V	--	500.4 V	--	On		--	00.0003
hodo_R3	849.0 V	--	849.6 V	--	On		--	00.0004
hodo_R4	966.0 V	--	966.8 V	--	On		--	00.0005
hodo_R5	950.0 V	--	951.0 V	--	On		--	00.0006
hodo_R6	500.0 V	--	500.4 V	--	On		--	00.0007
hodo_R7	787.0 V	--	787.8 V	--	On		--	00.0008
hodo_R8	873.0 V	--	873.6 V	--	On		--	00.0009
hodo_R9	812.0 V	--	812.8 V	--	On		--	00.0010
hodo_R10	883.0 V	--	884.0 V	--	On		--	00.0011
hodo_R11	756.0 V	--	756.8 V	--	On		--	00.0012
hodo_R12	876.0 V	--	877.0 V	--	On		--	00.0013
hodo_R13	891.0 V	--	892.0 V	--	On		--	00.0014
hodo_R14	921.0 V	--	922.2 V	--	On		--	00.0015
hodo_R15	883.0 V	--	883.8 V	--	On		--	00.0016
hodo_R16	853.0 V	--	853.8 V	--	On		--	00.0017
hodo_R17	844.0 V	--	844.6 V	--	On		--	00.0018

- The set values in telnet should match the set values in EPICS. If not, then adjust the set values in EPICS to what the values are set to in telnet. DO NOT change any values in telnet.
- Link for table of hodoscope HV values for left and right side:

<https://docs.google.com/spreadsheets/d/1zLP-EcmTfvqp03FQmC8ZNb2EocsTjxnE2qipitqOwSw/edit?usp=sharing>

- Below is a table of the HV values from the link provided.

HV_BBhodo_0		1300.0 V	12.00 mA	1.4 V	0.02 mA	Off	1350		00.0000			
hodo_R0		729.0 V	--	0.0 V	--	On	--		00.0001			
hodo_R1		877.0 V	--	0.0 V	--	On	--		00.0002			
hodo_R2		500.0 V	--	0.0 V	--	On	--		00.0003			
hodo_R3		829.0 V	--	0.0 V	--	On	--		00.0004			
hodo_R4		996.0 V	--	0.0 V	--	On	--		00.0005			
hodo_R5		930.0 V	--	0.0 V	--	On	--		00.0006			
hodo_R6		500.0 V	--	0.0 V	--	On	--		00.0007			
hodo_R7		767.0 V	--	0.0 V	--	On	--		00.0008			
hodo_R8		853.0 V	--	0.0 V	--	On	--		00.0009			
hodo_R9		792.0 V	--	0.0 V	--	On	--		00.0010			
hodo_R10		873.0 V	--	0.0 V	--	On	--		00.0011			
hodo_R11		716.0 V	--	0.0 V	--	On	--		00.0012			
hodo_R12		856.0 V	--	0.0 V	--	On	--		00.0013			
hodo_R13		871.0 V	--	0.0 V	--	On	--		00.0014			
hodo_R14		901.0 V	--	0.0 V	--	On	--		00.0015			
hodo_R15		863.0 V	--	0.0 V	--	On	--		00.0016			
hodo_R16		833.0 V	--	0.0 V	--	On	--		00.0017			
hodo_R17		824.0 V	--	0.0 V	--	On	--		00.0018			
hodo_R18		836.0 V	--	0.0 V	--	On	--		00.0019			
hodo_R19		847.0 V	--	0.0 V	--	On	--		00.0020			



hodo_R20		832.0 V -- 0.0 V -- On --		00.0021			
hodo_R21		771.0 V -- 0.0 V -- On --		00.0022			
hodo_R22		890.0 V -- 0.0 V -- On --		00.0023			
hodo_R23		889.0 V -- 0.0 V -- On --		00.0024			
hodo_R24		923.0 V -- 0.0 V -- On --		00.0025			
hodo_R25		898.0 V -- 0.0 V -- On --		00.0026			
hodo_R26		820.0 V -- 0.0 V -- On --		00.0027			
hodo_R27		866.0 V -- 0.0 V -- On --		00.0028			
hodo_R28		906.0 V -- 0.0 V -- On --		00.0029			
hodo_R29		877.0 V -- 0.0 V -- On --		00.0030			
hodo_R30		0.0 V -- 0.0 V -- On --		00.0031			
hodo_R31		912.0 V -- 0.0 V -- On --		00.0032			
hodo_R32		934.0 V -- 0.0 V -- On --		00.0033			
hodo_R33		804.0 V -- 0.0 V -- On --		00.0034			
hodo_R34		774.0 V -- 0.0 V -- On --		00.0035			
hodo_R35		808.0 V -- 0.0 V -- On --		00.0036			
hodo_R36		784.0 V -- 0.0 V -- On --		00.0037			
hodo_R37		877.0 V -- 0.0 V -- On --		00.0038			
hodo_R38		787.0 V -- 0.0 V -- On --		00.0039			
hodo_R39		855.0 V -- 0.0 V -- On --		00.0040			
hodo_R40		864.0 V -- 0.0 V -- On --		00.0041			
hodo_R41		956.0 V -- 0.0 V -- On --		00.0042			
hodo_R42		853.0 V -- 0.0 V -- On --		00.0043			
hodo_R43		921.0 V -- 0.0 V -- On --		00.0044			
hodo_R44		817.0 V -- 0.0 V -- On --		00.0045			
hodo_R45		930.0 V -- 0.0 V -- On --		00.0046			
hodo_R46		909.0 V -- 0.0 V -- On --		00.0047			
hodo_R47		937.0 V -- 0.0 V -- On --		00.0048			
HV_BBhodo_1		1300.0 V 12.00 mA 0.0 V 0.00 mA Off 1350		02.0000			
hodo_L0		500.0 V -- 0.0 V -- On --		02.0001			
hodo_L1		944.0 V -- 0.0 V -- On --		02.0002			
hodo_L2		717.0 V -- 0.0 V -- On --		02.0003			

hodo_L3		817.0 V -- 0.0 V -- On --		02.0004			
hodo_L4		792.0 V -- 0.0 V -- On --		02.0005			
hodo_L5		805.0 V -- 0.0 V -- On --		02.0006			
hodo_L6		1067.0 V -- 0.0 V -- On --		02.0007			
hodo_L7		983.0 V -- 0.0 V -- On --		02.0008			
hodo_L8		909.0 V -- 0.0 V -- On --		02.0009			
hodo_L9		884.0 V -- 0.0 V -- On --		02.0010			
hodo_L10		757.0 V -- 0.0 V -- On --		02.0011			
hodo_L11		0.0 V -- 0.0 V -- On --		02.0012			
hodo_L12		833.0 V -- 0.0 V -- On --		02.0013			
hodo_L13		953.0 V -- 0.0 V -- On --		02.0014			
hodo_L14		890.0 V -- 0.0 V -- On --		02.0015			
hodo_L15		953.0 V -- 0.0 V -- On --		02.0016			
hodo_L16		953.0 V -- 0.0 V -- On --		02.0017			
hodo_L17		808.0 V -- 0.0 V -- On --		02.0018			
hodo_L18		805.0 V -- 0.0 V -- On --		02.0019			
hodo_L19		862.0 V -- 0.0 V -- On --		02.0020			
hodo_L20		696.0 V -- 0.0 V -- On --		02.0021			
hodo_L21		818.0 V -- 0.0 V -- On --		02.0022			
hodo_L22		968.0 V -- 0.0 V -- On --		02.0023			
hodo_L23		899.0 V -- 0.0 V -- On --		02.0024			
hodo_L24		909.0 V -- 0.0 V -- On --		02.0025			
hodo_L25		847.0 V -- 0.0 V -- On --		02.0026			
hodo_L26		692.0 V -- 0.0 V -- On --		02.0027			
hodo_L27		813.0 V -- 0.0 V -- On --		02.0028			
hodo_L28		768.0 V -- 0.0 V -- On --		02.0029			
hodo_L29		864.0 V -- 0.0 V -- On --		02.0030			
hodo_L30		942.0 V -- 0.0 V -- On --		02.0031			
hodo_L31		955.0 V -- 0.0 V -- On --		02.0032			
hodo_L32		776.0 V -- 0.0 V -- On --		02.0033			
hodo_L33		860.0 V -- 0.0 V -- On --		02.0034			
hodo_L34		777.0 V -- 0.0 V -- On --		02.0035			

hodo_L35		826.0 V	--	0.0 V	--	On	--		02.0036			
hodo_L36		904.0 V	--	0.0 V	--	On	--		02.0037			
hodo_L37		827.0 V	--	0.0 V	--	On	--		02.0038			
hodo_L38		809.0 V	--	0.0 V	--	On	--		02.0039			
hodo_L39		1021.0 V	--	0.0 V	--	On	--		02.0040			
hodo_L40		834.0 V	--	0.0 V	--	On	--		02.0041			
hodo_L41		831.0 V	--	0.0 V	--	On	--		02.0042			
hodo_L42		885.0 V	--	0.0 V	--	On	--		02.0043			
hodo_L43		890.0 V	--	0.0 V	--	On	--		02.0044			
hodo_L44		811.0 V	--	0.0 V	--	On	--		02.0045			
hodo_L45		900.0 V	--	0.0 V	--	On	--		02.0046			
hodo_L46		926.0 V	--	0.0 V	--	On	--		02.0047			
hodo_L47		1084.0 V	--	0.0 V	--	On	--		02.0048			
HV_BBhodo_2		1300.0 V		12.00 mA		0.0 V		0.00 mA	Off	1350		04.0000
hodo_R48		994.0 V	--	0.0 V	--	On	--		04.0001			
hodo_R49		728.0 V	--	0.0 V	--	On	--		04.0002			
hodo_R50		883.0 V	--	0.0 V	--	On	--		04.0003			
hodo_R51		911.0 V	--	0.0 V	--	On	--		04.0004			
hodo_R52		806.0 V	--	0.0 V	--	On	--		04.0005			
hodo_R53		957.0 V	--	0.0 V	--	On	--		04.0006			
hodo_R54		813.0 V	--	0.0 V	--	On	--		04.0007			
hodo_R55		818.0 V	--	0.0 V	--	On	--		04.0008			
hodo_R56		895.0 V	--	0.0 V	--	On	--		04.0009			
hodo_R57		875.0 V	--	0.0 V	--	On	--		04.0010			
hodo_R58		823.0 V	--	0.0 V	--	On	--		04.0011			
hodo_R59		907.0 V	--	0.0 V	--	On	--		04.0012			
hodo_R60		862.0 V	--	0.0 V	--	On	--		04.0013			
hodo_R61		769.0 V	--	0.0 V	--	On	--		04.0014			
hodo_R62		860.0 V	--	0.0 V	--	On	--		04.0015			
hodo_R63		873.0 V	--	0.0 V	--	On	--		04.0016			
hodo_R64		961.0 V	--	0.0 V	--	On	--		04.0017			
hodo_R65		993.0 V	--	0.0 V	--	On	--		04.0018			

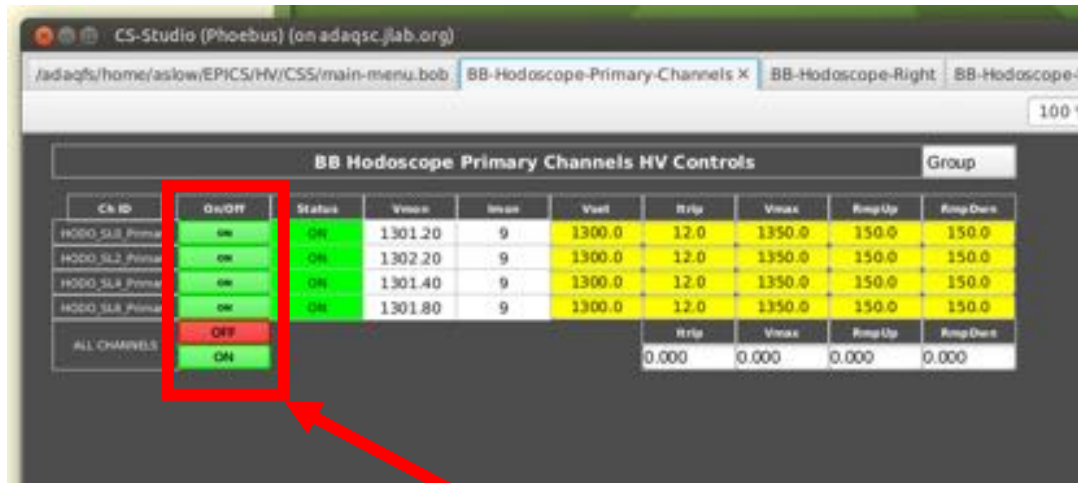
hodo_R66		965.0 V	--	0.0 V	--	On	--		04.0019			
hodo_R67		920.0 V	--	0.0 V	--	On	--		04.0020			
hodo_R68		786.0 V	--	0.0 V	--	On	--		04.0021			
hodo_R69		972.0 V	--	0.0 V	--	On	--		04.0022			
hodo_R70		952.0 V	--	0.0 V	--	On	--		04.0023			
hodo_R71		873.0 V	--	0.0 V	--	On	--		04.0024			
hodo_R72		950.0 V	--	0.0 V	--	On	--		04.0025			
hodo_R73		807.0 V	--	0.0 V	--	On	--		04.0026			
hodo_R74		883.0 V	--	0.0 V	--	On	--		04.0027			
hodo_R75		885.0 V	--	0.0 V	--	On	--		04.0028			
hodo_R76		699.0 V	--	0.0 V	--	On	--		04.0029			
hodo_R77		971.0 V	--	0.0 V	--	On	--		04.0030			
hodo_R78		877.0 V	--	0.0 V	--	On	--		04.0031			
hodo_R79		839.0 V	--	0.0 V	--	On	--		04.0032			
hodo_R80		888.0 V	--	0.0 V	--	On	--		04.0033			
hodo_R81		780.0 V	--	0.0 V	--	On	--		04.0034			
hodo_R82		804.0 V	--	0.0 V	--	On	--		04.0035			
hodo_R83		862.0 V	--	0.0 V	--	On	--		04.0036			
hodo_R84		1053.0 V	--	0.0 V	--	On	--		04.0037			
hodo_R85		983.0 V	--	0.0 V	--	On	--		04.0038			
hodo_R86		791.0 V	--	0.0 V	--	On	--		04.0039			
hodo_R87		934.0 V	--	0.0 V	--	On	--		04.0040			
hodo_R88		804.0 V	--	0.0 V	--	On	--		04.0041			
hodo_R89		500.0 V	--	0.0 V	--	On	--		04.0042			
spare		500.0 V	--	0.0 V	--	On	--		04.0043			
spare		847.0 V	--	0.0 V	--	On	--		04.0044			
spare		899.0 V	--	0.0 V	--	On	--		04.0045			
spare		946.0 V	--	0.0 V	--	On	--		04.0046			
spare		500.0 V	--	0.0 V	--	On	--		04.0047			
spare		500.0 V	--	0.0 V	--	On	--		04.0048			
HV_BBhodo_3		1300.0 V	12.00 mA	0.0 V	0.00 mA	Off	1350		06.0000			
hodo_L48		694.0 V	--	0.0 V	--	On	--		06.0001			

hodo_L49		768.0 V -- 0.0 V -- On --		06.0002			
hodo_L50		1065.0 V -- 0.0 V -- On --		06.0003			
hodo_L51		863.0 V -- 0.0 V -- On --		06.0004			
hodo_L52		740.0 V -- 0.0 V -- On --		06.0005			
hodo_L53		835.0 V -- 0.0 V -- On --		06.0006			
hodo_L54		926.0 V -- 0.0 V -- On --		06.0007			
hodo_L55		813.0 V -- 0.0 V -- On --		06.0008			
hodo_L56		762.0 V -- 0.0 V -- On --		06.0009			
hodo_L57		841.0 V -- 0.0 V -- On --		06.0010			
hodo_L58		826.0 V -- 0.0 V -- On --		06.0011			
hodo_L59		761.0 V -- 0.0 V -- On --		06.0012			
hodo_L60		928.0 V -- 0.0 V -- On --		06.0013			
hodo_L61		864.0 V -- 0.0 V -- On --		06.0014			
hodo_L62		864.0 V -- 0.0 V -- On --		06.0015			
hodo_L63		833.0 V -- 0.0 V -- On --		06.0016			
hodo_L64		866.0 V -- 0.0 V -- On --		06.0017			
hodo_L65		832.0 V -- 0.0 V -- On --		06.0018			
hodo_L66		850.0 V -- 0.0 V -- On --		06.0019			
hodo_L67		961.0 V -- 0.0 V -- On --		06.0020			
hodo_L68		958.0 V -- 0.0 V -- On --		06.0021			
hodo_L69		957.0 V -- 0.0 V -- On --		06.0022			
hodo_L70		873.0 V -- 0.0 V -- On --		06.0023			
hodo_L71		853.0 V -- 0.0 V -- On --		06.0024			
hodo_L72		837.0 V -- 0.0 V -- On --		06.0025			
hodo_L73		901.0 V -- 0.0 V -- On --		06.0026			
hodo_L74		824.0 V -- 0.0 V -- On --		06.0027			
hodo_L75		915.0 V -- 0.0 V -- On --		06.0028			
hodo_L76		953.0 V -- 0.0 V -- On --		06.0029			
hodo_L77		947.0 V -- 0.0 V -- On --		06.0030			
hodo_L78		778.0 V -- 0.0 V -- On --		06.0031			
hodo_L79		893.0 V -- 0.0 V -- On --		06.0032			
hodo_L80		794.0 V -- 0.0 V -- On --		06.0033			

hodo_L81		794.0 V -- 0.0 V -- On --		06.0034			
hodo_L82		797.0 V -- 0.0 V -- On --		06.0035			
hodo_L83		927.0 V -- 0.0 V -- On --		06.0036			
hodo_L84		956.0 V -- 0.0 V -- On --		06.0037			
hodo_L85		930.0 V -- 0.0 V -- On --		06.0038			
hodo_L86		757.0 V -- 0.0 V -- On --		06.0039			
hodo_L87		890.0 V -- 0.0 V -- On --		06.0040			
hodo_L88		919.0 V -- 0.0 V -- On --		06.0041			
spare		0.0 V -- 0.0 V -- On --		06.0042			
spare		918.0 V -- 0.0 V -- On --		06.0043			
spare		925.0 V -- 0.0 V -- On --		06.0044			
spare		0.0 V -- 0.0 V -- On --		06.0045			
spare		500.0 V -- 0.0 V -- On --		06.0046			
spare		0.0 V -- 0.0 V -- On --		06.0047			
spare		500.0 V -- 0.0 V -- On --		06.0048			

- Do not edit the values in the link provided above unless you are one of the hodoscope experts
- From the command line type:
  - ssh aslow@adaqsc (check counting house white board for username/password)
  - go\_hv
- The EPICS gui will open with no vnc server necessary, give it a few seconds. There will be drop down menus for all detectors, find the primary, left side, and right side menus for hodoscope high voltage values.

- If the primary channels are off, then all other channels on the left and right will be off as well. If the primary channels are on, then all other channels on the left and right should be on as well. The primary channels should look as follows. To turn the whole detector off use primary channels.



ON/OFF CONTROL BUTTONS

- To check the high voltage values are set correctly, compare the values in EPICS to the values set using telnet.
- If there is a disconnect in communication between EPICS and the hodoscope high voltage try the following:
- Sometimes killing the IOC on aslow@adaqsc will fix the hodoscope EPICS.

Look for

```
../../../../bin/linux-x86_64/ioccaen ./st.cmd
```

and kill it. It will restart.

## **B.2 How to Turn On the High Voltage:**

**\*remote control is always the preferred first action**

### **a. Remotely Turning On High Voltage Main Frame:**

- To telnet into the high voltage main frame from the command line type:
  - ssh bbhodo@tedbbdaq (check counting house white board for username/password)
  - telnet bbth-hv 1527
    - (check counting house white board for username/password)
  - Use keyboard arrows and tab key to maneuver through the channels (See Section B.1)
- Use the telnet connection to turn the high voltage on remotely, this is as an alternative to using EPICS. In EPICS the primary channels can be turned on individually, as well as the individual channels on the left and right sides. In telnet the primary channels can be turned on individually, but the individual channels can only be turned off and on in groups of eight on the left and right sides.
- To use EPICS, from the command line type:
  - ssh aslow@adaqsc (check counting house white board for username/password)
  - go\_hv



- Use the EPICS gui to turn the high voltage on remotely, either press the ON bottom at the very bottom to turn on all channels in that tab or press the ON/OFF button on individual channels to turn on channels individually.

**b. Manually Turning On High Voltage Main Frame:**

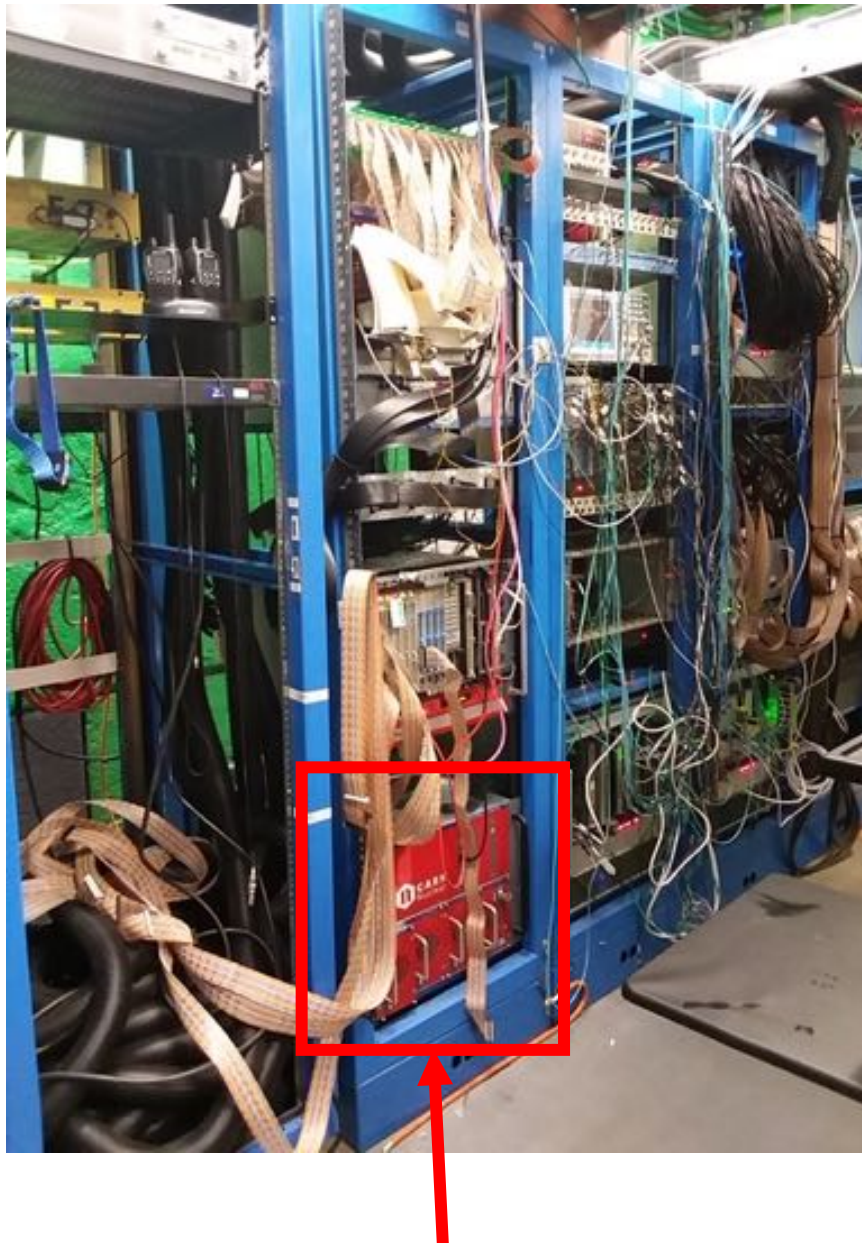
**\*requires controlled access**

- Only power cycle HV manually as a last resort and with agreed controlled access permission from the RC.
- Locate the SBS detector electronics bunker in Hall A



## TIMING HODOSCOPE ELECTRONICS RACK

- Locate the electronics rack housing the high voltage main frame



## HIGH VOLTAGE MAIN FRAME

- Turn the power key from “OFF” position to the right so the power key is in the “LOCAL” position



**LED LIGHTS**

**POWER KEY**

- “MAIN”, “OK”, “5+”, “12+”, and “12-” LEDs should turn on, as well as LEDs for “48+” corresponding to the high voltage channels being used

- If the high voltage main frame does not turn on, or if one of the LEDs is not turned on, check the power switch on the back of the high voltage main frame. If that does not work, then please contact an expert for help.

## **B.3 How to Turn Off the High Voltage:**

**\*remote control is always the preferred first action**

### **a. Remotely Turning Off High Voltage Main Frame:**

- To telnet into the high voltage main frame from the command line type:
  - ssh bbhodo@tedbbdaq (check counting house white board for username/password)
  - telnet bbth-hv 1527  
  
(check counting house white board for username/password)
  - Use keyboard arrows and tab key to maneuver through the channels (See Section B.1)
- Use the telnet connection to turn the high voltage off remotely, this is as an alternative to using EPICs. In EPICs the primary channels can be turned off individually, as well as the individual channels on the left and right sides. In telnet the primary channels can be turned off individually, but the individual channels only be turned off and on in groups of eight on the left and right sides.
- To use EPICs, from the command line type:
  - ssh aslow@adaqsc (check counting house white board for username/password)

- go\_hv

- Use the EPICS gui to turn the high voltage off remotely, either press the OFF button at the very bottom to turn off all channels in that tab or press the ON/OFF button on individual channels to turn off channels individually.

**b. Manually Turning Off the High Voltage Main Frame:**

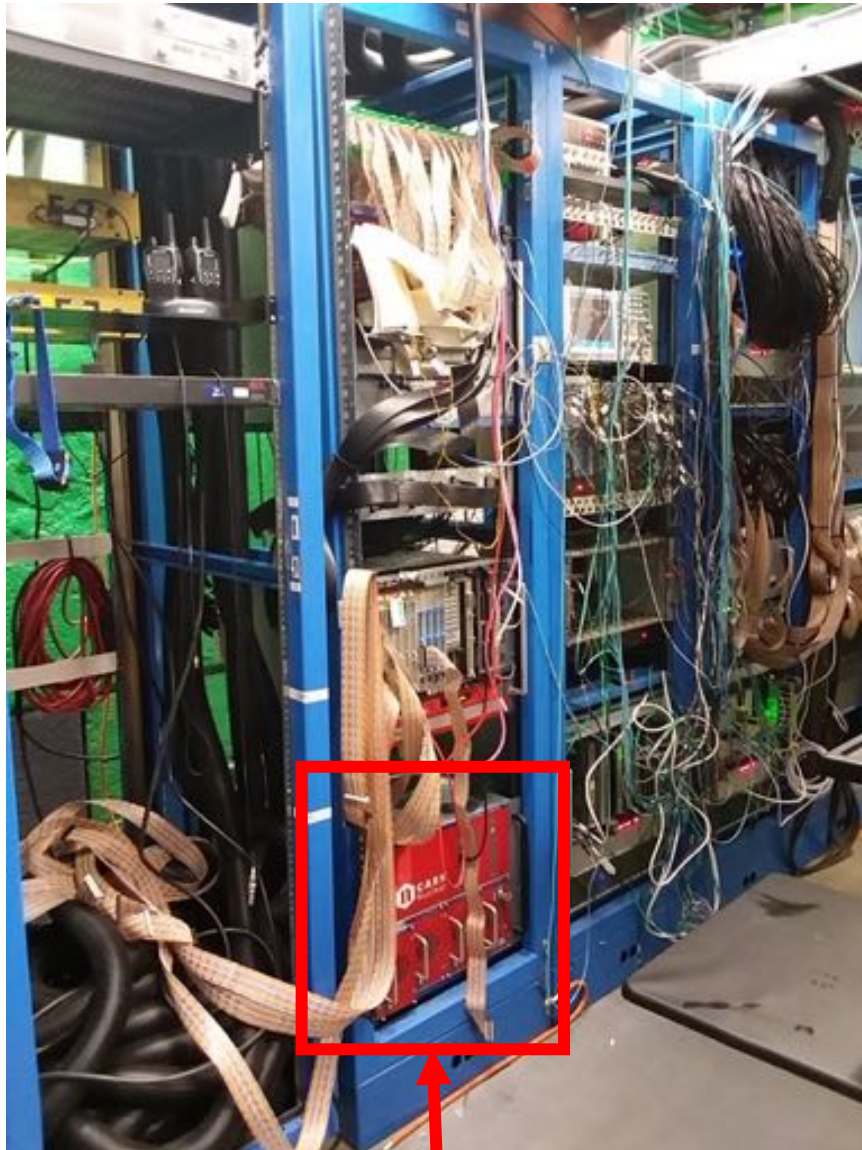
**\*requires controlled access**

- Only power cycle HV manually as a last resort and with agreed controlled access permission from the RC.
- Locate the SBS detector electronics bunker in Hall A



## TIMING HODOSCOPE ELECTRONICS RACK

- Locate the electronics rack housing the high voltage main frame



## HIGH VOLTAGE MAIN FRAME

- The power key should be in the “LOCAL” position, turn the power key to the left so the power key is in the “OFF” position.



**LED LIGHTS**

**POWER KEY**

- “MAIN”, “OK”, “5+”, “12+”, and “12-” LEDs should turn off, as well as LEDs for “48+” corresponding to the high voltage channels being used

- If the high voltage main frame does not turn on, or if one of the LEDs is not turned on, check the power switch on the back of the high voltage main frame. If that does not work, then please contact an expert for help.

## **B.4 How to Turn On the Low Voltage:**

**\*requires controlled access**

**a. Manually Turning On Low Voltage Power Supply:**

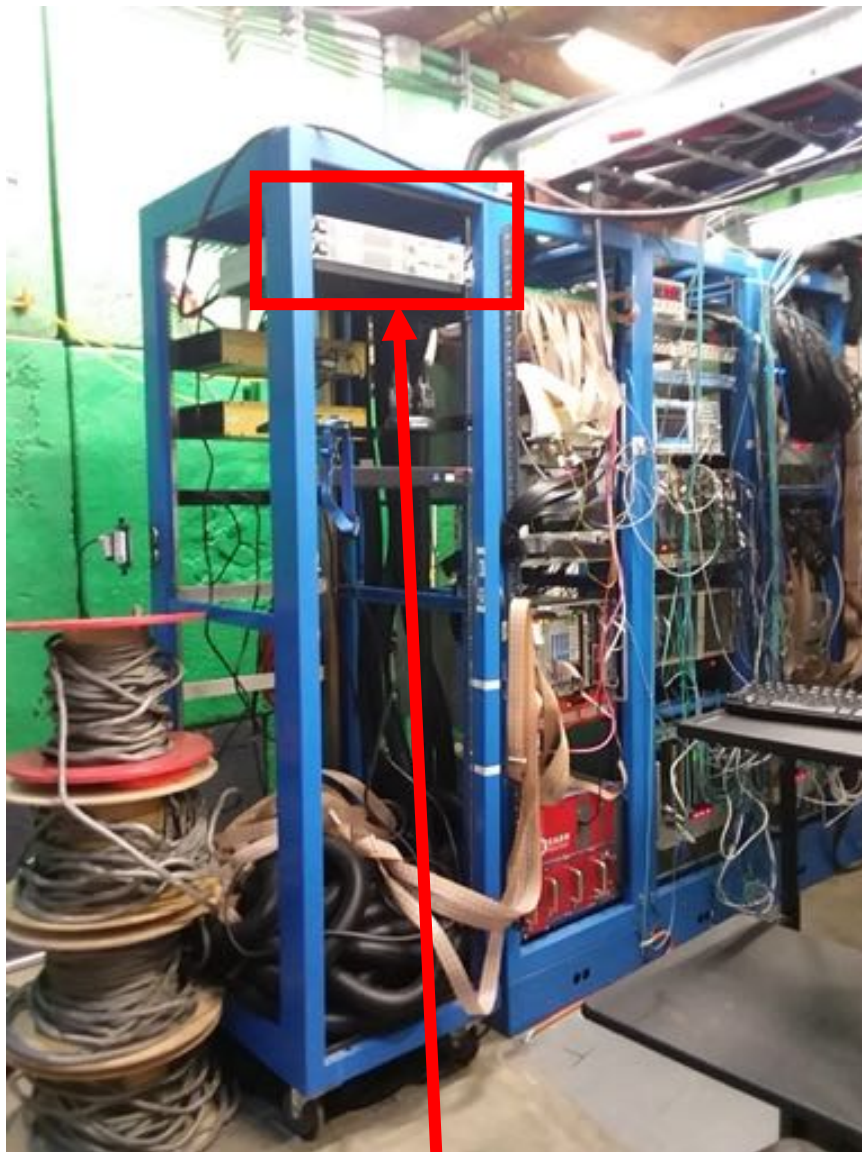
- Locate the SBS detector electronics bunker in Hall A





## TIMING HODOSCOPE ELECTRONICS RACK

- Locate the electronics rack housing the low voltage power supply



## LOW VOLTAGE POWER SUPPLY

- The power switch should be in the off position, flip the power switch to the on position. Adjust the voltage or current controls until the supply reads ~7.1 volts and ~15.79 amps.
- These values are set such that the NINO cards receive the minimum 5 volts necessary, and their thresholds are set to 1.6 volts.



POWER SWITCH

SUPPLY CONTROLS

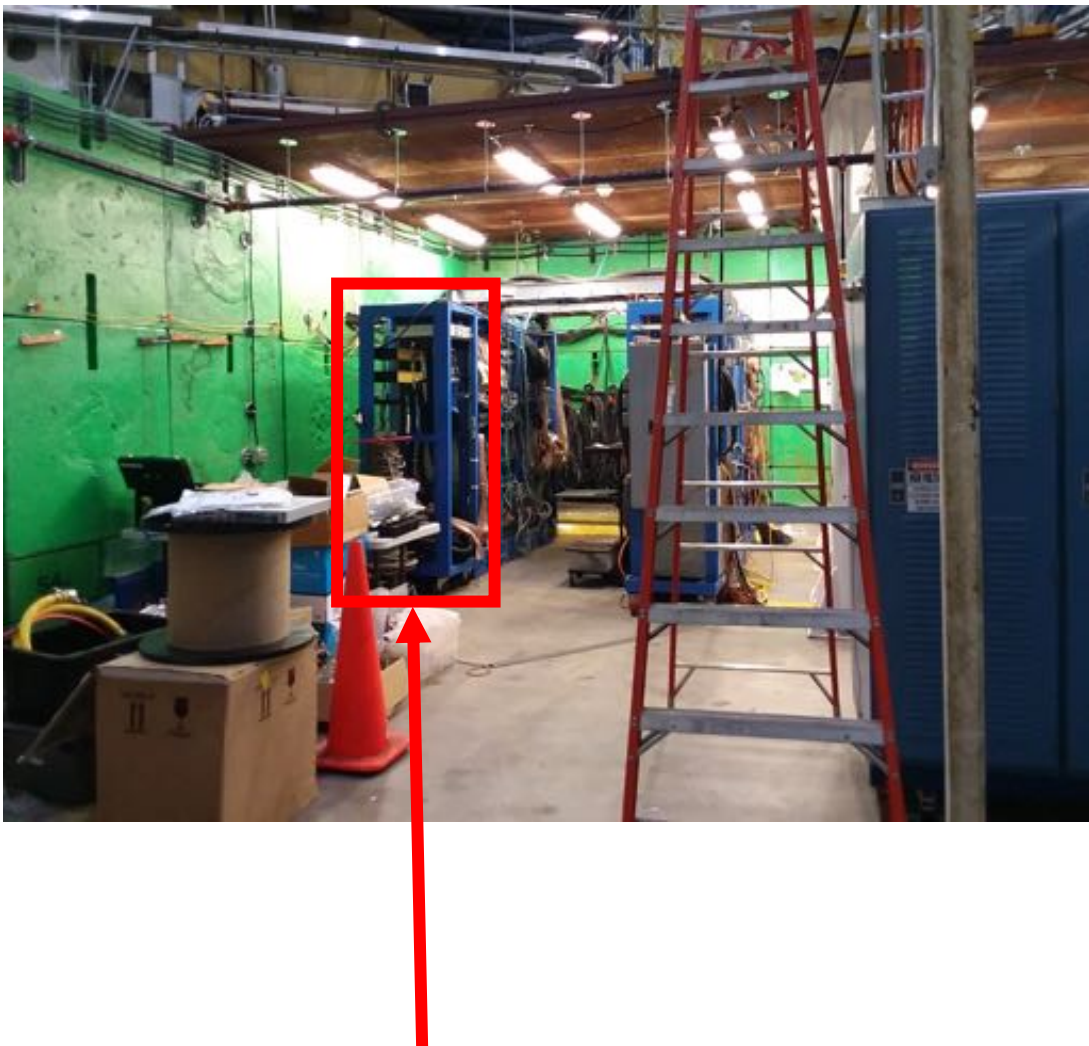
- If the low voltage power supply does not turn on, or if one of the supply controls do not work properly, then please contact an expert for help.

## **B.5 How to Turn Off the Low Voltage:**

**\*requires controlled access**

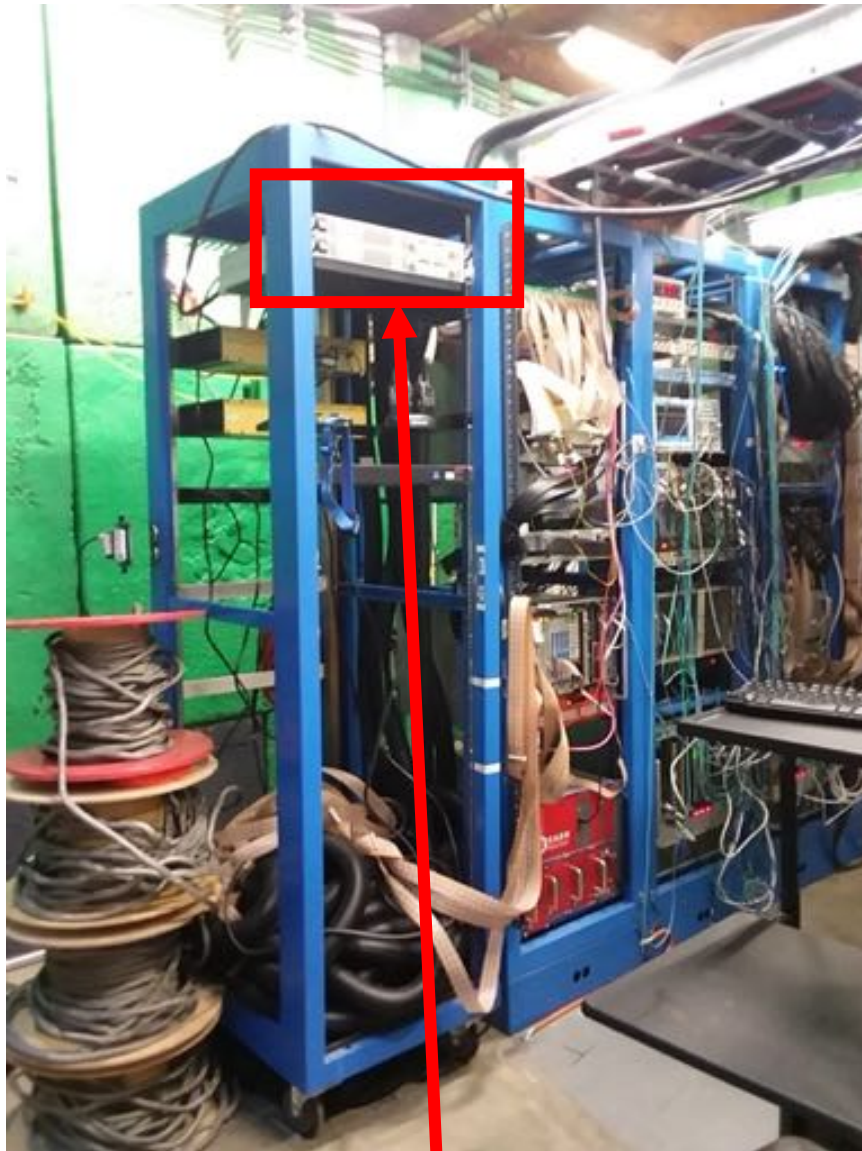
**a. Manually Turning Off Low Voltage Power Supply:**

- Locate the SBS detector electronics bunker in Hall A



## TIMING HODOSCOPE ELECTRONICS RACK

- Locate the electronics rack housing the low voltage power supply



## LOW VOLTAGE POWER SUPPLY

- The power switch should be in the on position. Adjust the voltage or current controls until the supply reads  $\sim 0.0$  volts and  $\sim 0.0$  amps, then flip the power switch to the off position.



**POWER SWITCH**

**SUPPLY CONTROLS**

- If the low voltage power supply does not turn off, or if one of the supply controls do not work properly, then please contact an expert for help.

## **B.6 How to Power Cycle VME Crate:**

**\*requires controlled access**

**a. Manually Power Cycling the VME Crate:**

- Locate the SBS detector electronics bunker in Hall A



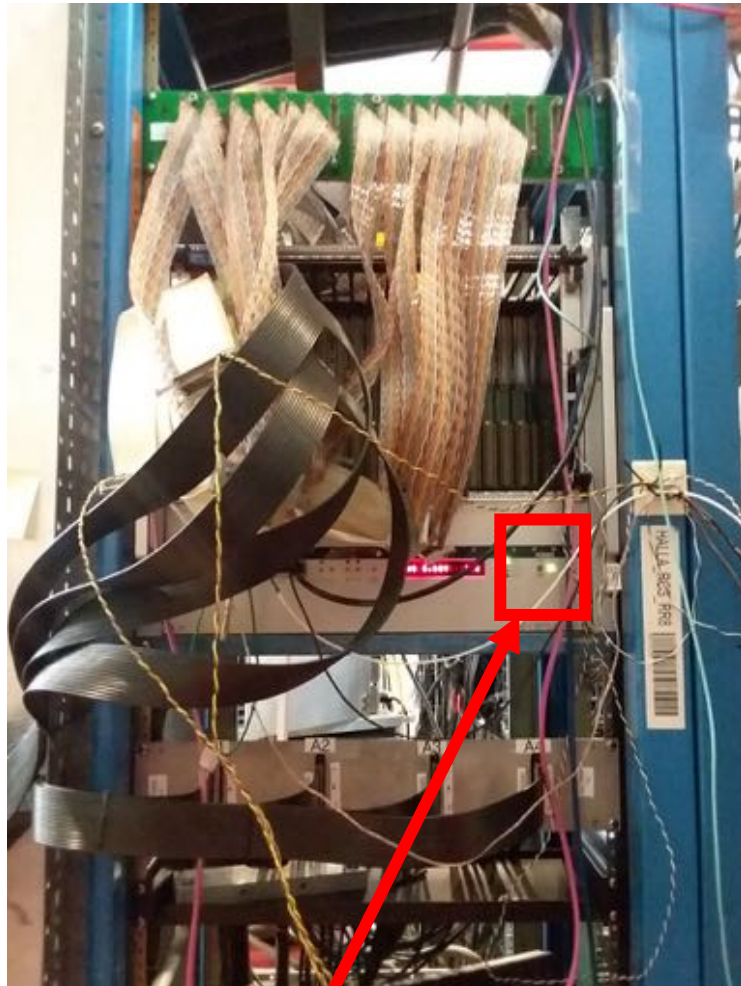
## TIMING HODOSCOPE ELECTRONICS RACK

- Locate the electronics rack housing the VME crate.



## VME CRATE

- The power switch should be in the on position. Flip the power switch to the off position and then the on position to power cycle the VME crate.





## **POWER SWITCH**

- If the VME crate does not power cycle correctly, then please contact an expert for help.