



Detector Support Group

Weekly Report, 2019-12-03

Summary

Hall A– SoLID Magnet Controls

- Verified JLab 100 μ A Constant Current Source (CCS) schematic matches parts list
 - ★ Preliminary component layout of PCB completed

	Reference	100uA CSS from S. Lassiter Parts list	100uA CSS from Jlab Schematic (Hall C)	Comment	Manuf.	Description
1	PL01	1803280	PL01		Phoenix Co	3 Pin Mini-combicon Header, MC1,5/3-G-3,81
2	PL01	1803581		Mating part to 1803280	Phoenix Co	3 Pin Mini-combicon Plug, MC1,5/3-ST-3,81
3	J1, J2	1803413			Phoenix Co	16 Pin Mini-combicon Header, MC1,5/16-G-3,81
4	J1, J2	1803714		Mating part to 1803413	Phoenix Co	16 Pin Mini-combicon Plug, MC1,5/16-ST-3,81
5	U101-U801	508-AG10D-ES		not on schematic	Augat	8 Pin Dip Socket
6	U101-U801	OPA234P	OPA234		Burr Brown	Op Amp
7	U1	AD58LJH	AD581		Analog De	10V Reference
8	U1	8059-2G1		not on schematic	Augat	3 Pin IC Socket
9	F101-F801	TRF250-120U-ND	TR250-120		Raychem	0.120 Amp Polyswitch
10	R1	9.1KADCT-ND	9.09K		Yageo	9.1K, 0.1% 1/4 Watt Resistor
11	R2	MFP-25BRD52-1K	1.01K	Typo in p/n	Yageo	1.0K, 0.1% 1/4 Watt Resistor
12	R101	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
13	R201	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
14	R301	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
15	R401	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
16	R501	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
17	R601	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
18	R701	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
19	R801	PTF5610K000BZEB	10K		VISHAY	10K, 0.1% 1/8 Watt Resistor, (I = 100 uA)
20	R102	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
21	R202	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
22	R302	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
23	R402	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
24	R502	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
25	R602	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
26	R702	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
27	R802	RN55D3011F	3K		Dale	3.01K, 1% 1/4 Watt Resistor
28	Q101-Q801	TIP29C	TIP29		Motorolla	30 W Power Transistor
29	Q101-Q801	532-576802B31G		not on pcb/schematic	Aavid	576802 Heat Sink
30	K101-K801	PE014024	PE Series Relay		Siemens	PE Series 5 Amp Relay, (1 Form C (SPDT)
31	JP101-JP802	538-87891-4006		full p/n (not on original list)	Molex	40 Pin Breakaway Header
32	JP101-JP802	SNT-100-BK-G		replaced wrong part	Samtec	Jumpers, Quantity 10, Part No.: JUMPERS
33	C101-C801	1C10X7R104K050B		replaced obsolete p/n	VISHAY	0.1uF Monolithic Cap

Spreadsheet comparing parts list to JLab schematic of the 100 μ A CCS board

- Test connectors ordered for the spare CCS board
- Developing FactoryTalk View data logger
 - ★ Installed SQL Server Management Studio 2008 to manage database and store data from PLC test station
 - ★ Testing communication between FactoryTalk View (ODBC data archiving mode) and database source in SQL Server
- Developing controls and instrumentation drawings
 - ★ Modifying drawing numbers based on JLab convention

Hall B – HDice

- Developed LabVIEW code to average, plot, and save to a text file Lock-in amplifier readings

Hall B – LTCC

- Updated, for sector 3, mass flow controller's full scale flow rate value to 7 liters/minute
 - ★ Allows Hall B to fill the sector at a faster rate



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Hall B – RICH

- Relocated aerogel from EEL 124 dry-cabinet to EEL 121b dry-cabinets after finding that EEL 124 dry-cabinet was not working
 - * Emailed manufacturer about the problem

Hall B – SVT

- Debugged leak sensor malfunction located in the instrumentation cart
 - * Hardware interlock tripped after leak sensor was unseated; size of drip pan where sensor is located prevents it from sitting flat on its base
 - * Taped sensor and base to bottom of drip pan to seat sensor correctly on its base
 - * Tested sensor by adding water drops in the drip pan

Hall B – Torus Magnet

- Debugged magnets inability to ramp to negative current
 - * Verified there is no code on PLC preventing user from entering a negative current
 - * Issue caused by some internal fault of MPS control board; hard power cycle of board resolved the issue

Hall C

- Terminated 15 four-wire RTD cables for polarized 3He target

Hall C – CAEN HV Hardware Testing

- Investigated cause of communication loss of board with the mainframe (*hvcaentest2*)
 - * Tested three boards (Ser. #s 0262, 0301, 0302) in slot 0
 - * Noted slot connection error at least once with all three boards
 - Indicates problem with the crate and not with boards

DSG R&D – EPICS Data Logger

- Changed the monitoring code to output timestamp as well as PV information
 - * Timestamp no longer has to be appended to PV output data
- Linker issues during compiling caused by adding MySQL statements to monitoring code
 - * Adding file paths for the correct MySQL and system libraries to *makefile* solved these issues

DSG R&D – LV Chassis sbRIO

- Developed ADC communication subVIs for sbRIO
 - * subVIs generate clock and data signals required to read out ADCs in LV Chassis
- Mapped old DE0-Nano FPGA read/write addresses for sensors to sbRIO digital input/output channels
- Developed “FPGA Read” and “FPGA Write” subVIs to be used in LV Chassis LabVIEW program in place of serial read/write

DSG R&D – RICH

- Developed with LabVIEW analysis package to set hi and low alarm limits, calculate rolling averages, and plot real time values for hardware interlock systems



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Main Plots Expert

Run type
random numbers

of temp pts. to average: 100

temp. random # bounds
lower bound (0 min): 35
upper bound: 50

of RH pts. to average: 100

RH random# bounds
lower bound (0 min): 35
upper bound: 50

temperature alarm limits [C°]

temp upper alarms 1-24	temp upper alarms 25-48	temp lower alarms 1-24	temp lower alarms 25-48
temp 01: 45	temp 25: 45	temp 01: 40	temp 25: 40
temp 02: 45	temp 26: 45	temp 02: 40	temp 26: 40
temp 03: 45	temp 27: 45	temp 03: 40	temp 27: 40
temp 04: 45	temp 28: 45	temp 04: 40	temp 28: 40
temp 05: 45	temp 29: 45	temp 05: 40	temp 29: 40
temp 06: 45	temp 30: 45	temp 06: 40	temp 30: 40
temp 07: 45	temp 31: 45	temp 07: 40	temp 31: 40
temp 08: 45	temp 32: 45	temp 08: 40	temp 32: 40
temp 09: 45	temp 33: 45	temp 09: 40	temp 33: 40
temp 10: 45	temp 34: 45	temp 10: 40	temp 34: 40
temp 11: 45	temp 35: 45	temp 11: 40	temp 35: 40
temp 12: 45	temp 36: 45	temp 12: 40	temp 36: 40
temp 13: 45	temp 37: 45	temp 13: 40	temp 37: 40
temp 14: 45	temp 38: 45	temp 14: 40	temp 38: 40
temp 15: 45	temp 39: 45	temp 15: 40	temp 39: 40
temp 16: 45	temp 40: 45	temp 16: 40	temp 40: 40
temp 17: 45	temp 41: 45	temp 17: 40	temp 41: 40
temp 18: 45	temp 42: 45	temp 18: 40	temp 42: 40
temp 19: 45	temp 43: 45	temp 19: 40	temp 43: 40
temp 20: 45	temp 44: 45	temp 20: 40	temp 44: 40
temp 21: 45	temp 45: 45	temp 21: 40	temp 45: 40
temp 22: 45	temp 46: 45	temp 22: 40	temp 46: 40
temp 23: 45	temp 47: 45	temp 23: 40	temp 47: 40
temp 24: 45	temp 48: 45	temp 24: 40	temp 48: 40

RH alarm limits

RH upper alarms 1-24	RH upper alarms 25-48	RH lower alarms 1-24	RH lower alarms 25-48
RH 01: 45	RH 25: 45	RH 01: 40	RH 25: 40
RH 02: 45	RH 26: 45	RH 02: 40	RH 26: 40
RH 03: 45	RH 27: 45	RH 03: 40	RH 27: 40
RH 04: 45	RH 28: 45	RH 04: 40	RH 28: 40
RH 05: 45	RH 29: 45	RH 05: 40	RH 29: 40
RH 06: 45	RH 30: 45	RH 06: 40	RH 30: 40
RH 07: 45	RH 31: 45	RH 07: 40	RH 31: 40
RH 08: 45	RH 32: 45	RH 08: 40	RH 32: 40
RH 09: 45	RH 33: 45	RH 09: 40	RH 33: 40
RH 10: 45	RH 34: 45	RH 10: 40	RH 34: 40
RH 11: 45	RH 35: 45	RH 11: 40	RH 35: 40
RH 12: 45	RH 36: 45	RH 12: 40	RH 36: 40
RH 13: 45	RH 37: 45	RH 13: 40	RH 37: 40
RH 14: 45	RH 38: 45	RH 14: 40	RH 38: 40
RH 15: 45	RH 39: 45	RH 15: 40	RH 39: 40
RH 16: 45	RH 40: 45	RH 16: 40	RH 40: 40
RH 17: 45	RH 41: 45	RH 17: 40	RH 41: 40
RH 18: 45	RH 42: 45	RH 18: 40	RH 42: 40
RH 19: 45	RH 43: 45	RH 19: 40	RH 43: 40
RH 20: 45	RH 44: 45	RH 20: 40	RH 44: 40
RH 21: 45	RH 45: 45	RH 21: 40	RH 45: 40
RH 22: 45	RH 46: 45	RH 22: 40	RH 46: 40
RH 23: 45	RH 47: 45	RH 23: 40	RH 47: 40
RH 24: 45	RH 48: 45	RH 24: 40	RH 48: 40

Expert screen where user can set alarm limits for temperature and humidity.

Main Plots Expert

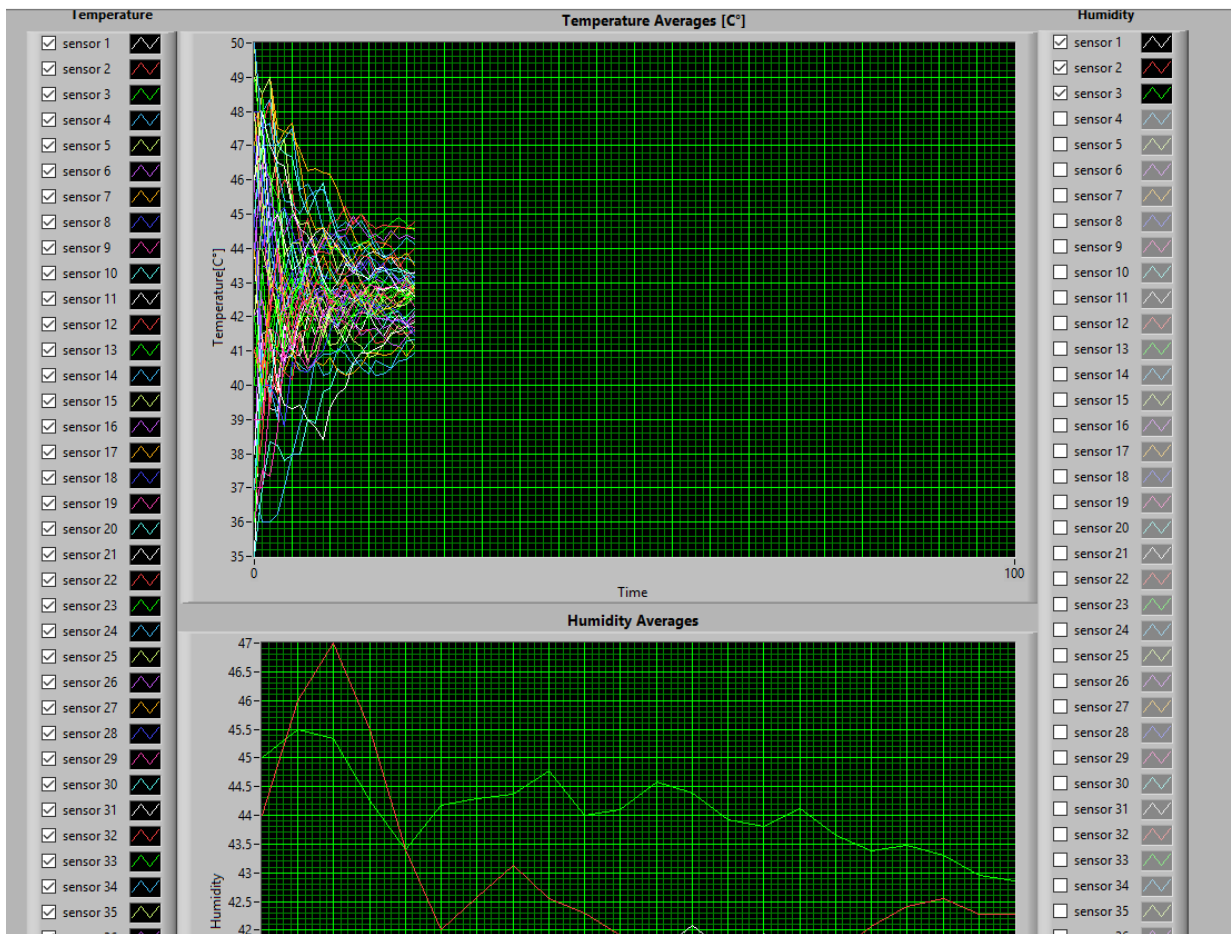
STOP

all temps average: 44.08

Temperatures [C°]

temp.	avg.	std. dev.	over limit	# over limit	under limit	# under limit
temp 01: 45	45.17	3.66	0	0	0	0
temp 02: 42	41.67	1.37	0	0	0	0
temp 03: 40	44.83	3.66	0	0	0	0
temp 04: 46	45.17	2.14	0	0	0	0
temp 05: 41	44.17	2.04	0	0	0	0
temp 06: 49	46.67	3.72	0	0	0	0
temp 07: 40	44.67	3.67	0	0	0	0
temp 08: 47	44.17	3.43	0	0	0	0
temp 09: 41	45.17	3.43	0	0	0	0
temp 10: 47	47.67	2.07	0	0	0	0
temp 11: 43	45	1.67	0	0	0	0
temp 12: 46	46.17	3.06	0	0	0	0
temp 13: 44	45.17	2.32	0	0	0	0
temp 14: 46	46.67	1.03	0	0	0	0
temp 15: 50	45.5	3.45	0	0	0	0
temp 16: 40	45.33	4.08	0	0	0	0
temp 17: 46	43	2.37	0	0	0	0
temp 18: 45	43.33	1.51	0	0	0	0
temp 19: 45	47	3.22	0	0	0	0
temp 20: 49	44	2.68	0	0	0	0
temp 21: 41	43.83	2.79	0	0	0	0
temp 22: 47	46.33	1.51	0	0	0	0
temp 23: 41	44.5	3.73	0	0	0	0
temp 24: 44	46.67	2.8	0	0	0	0
temp 25: 40	44.33	2.88	0	0	0	0
temp 26: 50	46.83	3.43	0	0	0	0
temp 27: 45	47.17	2.32	0	0	0	0
temp 28: 42	43.17	2.14	0	0	0	0
temp 29: 45	44.5	3.21	0	0	0	0
temp 30: 45	45.17	2.86	0	0	0	0
temp 31: 44	44.17	1.33	0	0	0	0
temp 32: 50	45.83	3.49	0	0	0	0
temp 33: 42	44.17	2.48	0	0	0	0
temp 34: 45	44.67	3.01	0	0	0	0
temp 35: 42	44	3.03	0	0	0	0
temp 36: 41	45.17	3.66	0	0	0	0
temp 37: 40	45	3.79	0	0	0	0
temp 38: 44	43.33	0.52	0	0	0	0
temp 39: 44	43	2.53	0	0	0	0
temp 40: 44	44.83	2.4	0	0	0	0
temp 41: 44	43.67	1.21	0	0	0	0
temp 42: 43	46.17	3.19	0	0	0	0
temp 43: 46	44.17	2.48	0	0	0	0
temp 44: 45	45	2.68	0	0	0	0
temp 45: 45	44.5	3.62	0	0	0	0
temp 46: 43	46	2.83	0	0	0	0
temp 47: 41	44	2.61	0	0	0	0
temp 48: 41	44.67	3.88	0	0	0	0

Main screen where user can monitor temperature values and alarms. Rolling average and standard deviation is displayed here for random temperature values during development.



Real-time plots of average temperature and humidity for each sensor. User can choose which sensor(s) to display.

Engineering Division

- Beam position monitor pcb population
 - ★ Soldered 24 test points, four dual LEDs, and four 96-pin DIN connectors (8 of 20 boards complete)