

Voltage Taps Database in SQLite

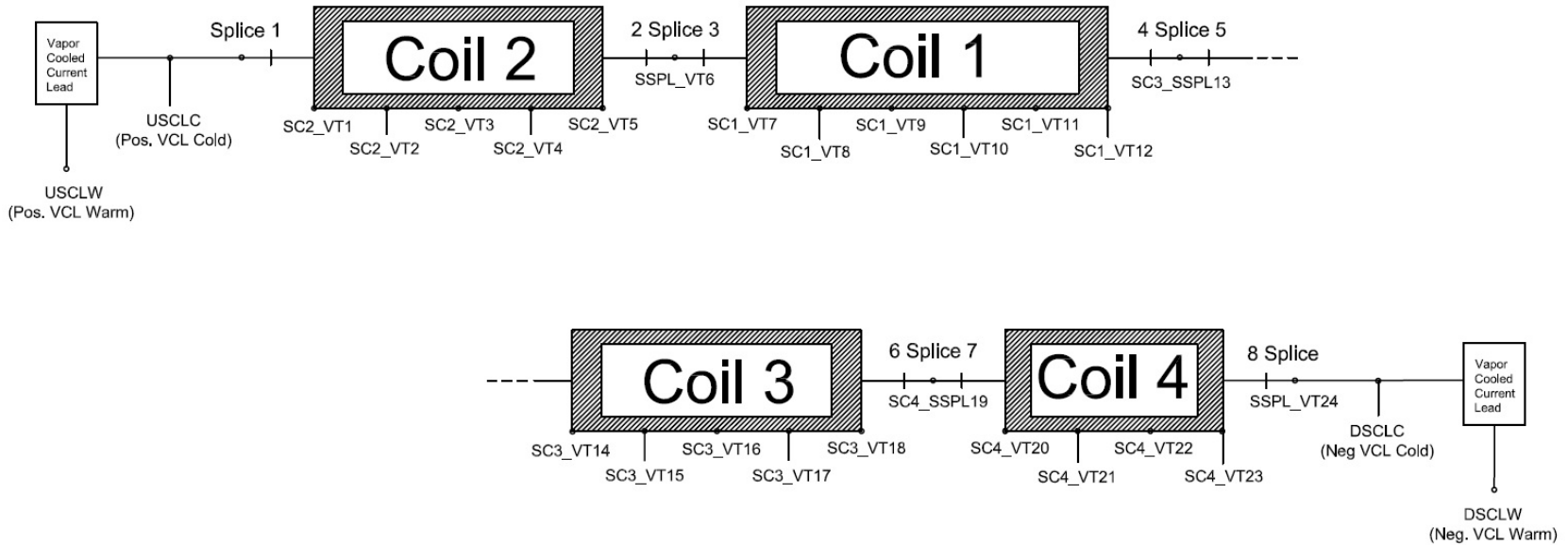
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Voltage Taps Introduction

- There are 31 voltage taps for Hall D solenoid.
- Voltage tap signals measure voltages in the four solenoid coils.
- Signals are monitored for sudden increases in voltage, signifying a non-superconducting state such as a quench.

Hall D Solenoid Voltage Tap Tags

- Voltage Tap Schematic



Voltage Tap Readings Spreadsheet

- Excel spreadsheet

Voltage Drop Readings on Voltage Taps

Measurements @ Current Limiting Resistor Boxes			Measurements @ Voltage Taps Test Box			
Voltage Tap designation	Voltage Reading	Drop Difference	Voltage Tap designation	Voltage Reading	Drop Difference	Voltage Tap Pairs Difference
Date 12/3/2015			Date			
Voltage 5.0V			Voltage			
Current 0.3A			Current			
USCLW (Pos. VCL Warm)	2.8046	-0.0245	USCLW (Pos. VCL Warm)	2.8044	-0.0256	-0.0002
USCLC (Pos. VCL Cold)	2.8291	0.0001	USCLCr (Pos. VCL Cold)	2.8300	0.0009	0.0009
SC2_VT1	2.8290	0.3388	SC2_VT1r	2.8291	0.3294	0.0001
SC2_VT2	2.4902	0.1683	SC2_VT2r	2.4997	0.1779	0.0095
SC2_VT3	2.3219	0.1874	SC2_VT3r	2.3218	0.1877	-0.0001
SC2_VT4	2.1345	0.2760	SC2_VT4r	2.1341	0.2763	-0.0004
SC2_VT5	1.8585		SC2_VT5r	1.8578		-0.0007

Coil 2

Voltage Tap SQLite Database

- Firefox SQLite Manager Add-on

rowid	date	test_voltage_V	current_A	vt_at_CLRB	vt_readings_at_CLRB_V	drop_diff...	vt_at_VTTB	vt_readings_at_VTTB_V	drop_diff...	difference_V	comments
401	2015-12-03	5	0.3	SC2_VT2	2.4902	0.3388	SC2_VT2r	2.4997	0.3294	0.0095	Ground fault 86 Ohms ...
402	2015-12-03	5	0.3	SC2_VT3	2.3219	0.1683	SC2_VT3r	2.3218	0.1779	-0.0001	Ground fault 86 Ohms ...
403	2015-12-03	5	0.3	SC2_VT4	2.1345	0.1874	SC2_VT4r	2.1341	0.1877	-0.0004	Ground fault 86 Ohms ...
404	2015-12-03	5	0.3	SC2_VT5	1.8585	0.276	SC2_VT5r	1.8578	0.2763	-0.0007	Ground fault 86 Ohms ...
405	2015-12-03	5	0.3	SSPL_VT6	1.8576	0.0009	SSPL_VT6r	1.8569	0.0009	-0.0007	Ground fault 86 Ohms ...
406	2015-12-03	5	0.3	SC1_VT7	1.8534	0.0042	SC1_VT7r	1.8524	0.0045	-0.001	Ground fault 86 Ohms ...
407	2015-12-03	5	0.3	SC1_VT8	1.2563	0.5971	SC1_VT8r	1.2566	0.5958	0.0003	Ground fault 86 Ohms ...
408	2015-12-03	5	0.3	SC1_VT9	1.1316	0.1247	SC1_VT9r	1.1321	0.1245	0.0005	Ground fault 86 Ohms ...
409	2015-12-03	5	0.3	SC1_VT10	1.0497	0.0819	SC1_VT10r	1.0501	0.082	0.0004	Ground fault 86 Ohms ...
410	2015-12-03	5	0.3	SC1_VT11	0.8237	0.226	SC1_VT11r	0.8239	0.2262	0.0002	Ground fault 86 Ohms ...
411	2015-12-03	5	0.3	SC1_VT12	0.3442	0.4795	SC1_VT12r	0.3436	0.4803	-0.0006	Ground fault 86 Ohms ...
412	2015-12-03	5	0.3	SC3_SSPL13	0.3433	0.0009	SC3_SSPL...	0.3426	0.001	-0.0007	Ground fault 86 Ohms ...
413	2015-12-03	5	0.3	SC3_VT14	0.3427	0.0006	SC3_VT14r	0.342	0.0006	-0.0007	Ground fault 86 Ohms ...
414	2015-12-03	5	0.3	SC3_VT15	0.0121	0.3306	SC3_VT15r	0.0119	0.3301	-0.0002	Ground fault 86 Ohms ...
415	2015-12-03	5	0.3	SC3_VT16	-0.3303	0.3424	SC3_VT16r	-0.3296	0.3415	0.0007	Ground fault 86 Ohms ...
416	2015-12-03	5	0.3	SC3_VT17	-0.3751	0.0448	SC3_VT17r	-0.3744	0.0448	0.0007	Ground fault 86 Ohms ...
417	2015-12-03	5	0.3	SC3_VT18	-0.4652	0.0901	SC3_VT18r	-0.4641	0.0897	0.0011	Ground fault 86 Ohms ...
418	2015-12-03	5	0.3	SC4_SSPL19	-0.4661	0.0009	SC4_SSPL...	-0.465	0.0009	0.0011	Ground fault 86 Ohms ...
419	2015-12-03	5	0.3	SC4_VT20	-0.4666	0.0005	SC4_VT20r	-0.4655	0.0005	0.0011	Ground fault 86 Ohms ...
420	2015-12-03	5	0.3	SC4_VT21	-0.6912	0.2246	SC4_VT21r	-0.6898	0.2243	0.0014	Ground fault 86 Ohms ...
421	2015-12-03	5	0.3	SC4_VT22	-1.4496	0.7584	SC4_VT22r	-1.4476	0.7578	0.002	Ground fault 86 Ohms ...
422	2015-12-03	5	0.3	SC4_VT23	-2.1122	0.6626	SC4_VT23r	-2.1102	0.6626	0.002	Ground fault 86 Ohms ...
423	2015-12-03	5	0.3	SSPL_VT24	-2.1128	0.0006	SSPL_VT24r	-2.1107	0.0005	0.0021	Ground fault 86 Ohms ...
424	2015-12-03	5	0.3	DSCLC (N...	-2.117	-0.0148	DSCLCr (...	-2.117	0.0063	0	SSPL_VT24 minus DSCL...
425	2015-12-03	5	0.3	DSCLW (...	-2.098	-0.019	DSCLW (...	-2.0981	-0.0189	-0.0001	Ground fault 86 Ohms ...

SQLite For Excel Program

- Program to read same database in Excel
- Provides easier query method than SQLite Manager

	A	B	C	D	E	F	G	H	I	J	K
1											
2		Database:	..\vt.sqlite								
3		SQL:	select * from voltage_taps								
4		Returned:	425 rows								
5											
6			Query								
7											
8	Query result:										
9	date	test voltage_V	current_A	vt_at_CLRB	vt_readings_at_CLRB_V	drop_difference_at_CLRB_V	vt_at_VTTB	vt_readings_at_VTTB_V	drop_difference_at_VTTB_V	difference_V	comments
10	2012-11-02	5	0.327				USCLW (Pos. VCL Warm)	0			No resistor boxes
11	2012-11-02	5	0.327				USCLCr (Pos. VCL Cold)	0.012	-0.012		No resistor boxes
12	2012-11-02	5	0.327				SC2_VT1r	0.012	0		No resistor boxes
13	2012-11-02	5	0.327				SC2_VT2r	0.345	-0.333		No resistor boxes
14	2012-11-02	5	0.327				SC2_VT3r	0.525	-0.18		No resistor boxes
15	2012-11-02	5	0.327				SC2_VT4r	0.714	-0.189		No resistor boxes
16	2012-11-02	5	0.327				SC2_VT5r	0.993	-0.279		No resistor boxes
17	2012-11-02	5	0.327				SSPL_VT6r	0.994	-0.001		No resistor boxes
18	2012-11-02	5	0.327				SC1_VT7r	0.995	-0.001		No resistor boxes
19	2012-11-02	5	0.327				SC1_VT8r	1.598	-0.603		No resistor boxes
20	2012-11-02	5	0.327				SC1_VT9r	1.723	-0.125		No resistor boxes
21	2012-11-02	5	0.327				SC1_VT10r	1.806	-0.083		No resistor boxes
22	2012-11-02	5	0.327				SC1_VT11r	2.034	-0.228		No resistor boxes
23	2012-11-02	5	0.327				SC1_VT12r	2.518	-0.484		No resistor boxes
24	2012-11-02	5	0.327				SC3_SSPL13r	2.519	-0.001		No resistor boxes
25	2012-11-02	5	0.327				SC3_VT14r	2.52	-0.001		No resistor boxes
26	2012-11-02	5	0.327				SC3_VT15r	2.853	-0.333		No resistor boxes
27	2012-11-02	5	0.327				SC3_VT16r	3.198	-0.345		No resistor boxes
28	2012-11-02	5	0.327				SC3_VT17r	3.243	-0.045		No resistor boxes
29	2012-11-02	5	0.327				SC3_VT18r	3.334	-0.091		No resistor boxes
30	2012-11-02	5	0.327				SC4_SSPL19r	3.335	-0.001		No resistor boxes
31	2012-11-02	5	0.327				SC4_VT20r	3.335	0		No resistor boxes
32	2012-11-02	5	0.327				SC4_VT21r	3.562	-0.227		No resistor boxes
33	2012-11-02	5	0.327				SC4_VT22r	4.326	-0.764		No resistor boxes
34	2012-11-02	5	0.327				SC4_VT23r	4.995	-0.669		No resistor boxes
35	2012-11-02	5	0.327				SSPL_VT24r	4.995	0		No resistor boxes
36	2012-11-02	5	0.327				DSCLCr (Neg VCL Cold)	4.995	0		No resistor boxes
37	2012-11-02	5	0.327				DSCLW (Neg. VCL Warm)	5.01	-0.015		No resistor boxes
38	2012-11-07	5	0.336				USCLW (Pos. VCL Warm)	0			No resistor boxes
39	2012-11-07	5	0.336				USCLCr (Pos. VCL Cold)	0.0247	-0.0247		No resistor boxes
40	2012-11-07	5	0.336				SC2_VT1r	0.0247	0		No resistor boxes
41	2012-11-07	5	0.336				SC2_VT2r	0.356	-0.3313		No resistor boxes
42	2012-11-07	5	0.336				SC2_VT3r	0.534	-0.178		No resistor boxes
43	2012-11-07	5	0.336				SC2_VT4r	0.723	-0.189		No resistor boxes
44	2012-11-07	5	0.336				SC2_VT5r	1	-0.277		No resistor boxes
45	2012-11-07	5	0.336				SSPL_VT6r	1.001	-0.001		No resistor boxes
46	2012-11-07	5	0.336				SC1_VT7r	1.002	-0.001		No resistor boxes

SQLite For Excel Program (Query)

- Click Query
- Database is updated to show query results
- Returned cell shows number of rows returned

	A	B	C	D	E	F	G	H	I
1									
2		Database:	..\vt.sqlite						
3		SQL:	select date, test_voltage_V, current_A from voltage_taps where Date > '2015-01-01' and Test_voltage_V < 10 and Current_A < 1						
4		Returned:	84 rows						
5									
6			Query						
7									
8	Query result:								
9	date	test_voltage_V	current_A	#N/A					
10	2015-10-08	5	0.3	#N/A					
11	2015-10-08	5	0.3	#N/A					
12	2015-10-08	5	0.3	#N/A					
13	2015-10-08	5	0.3	#N/A					
14	2015-10-08	5	0.3	#N/A					
15	2015-10-08	5	0.3	#N/A					
16	2015-10-08	5	0.3	#N/A					
17	2015-10-08	5	0.3	#N/A					
18	2015-10-08	5	0.3	#N/A					
19	2015-10-08	5	0.3	#N/A					
20	2015-10-08	5	0.3	#N/A					
21	2015-10-08	5	0.3	#N/A					
22	2015-10-08	5	0.3	#N/A					
23	2015-10-08	5	0.3	#N/A					
24	2015-10-08	5	0.3	#N/A					
25	2015-10-08	5	0.3	#N/A					
26	2015-10-08	5	0.3	#N/A					
27	2015-10-08	5	0.3	#N/A					
28	2015-10-08	5	0.3	#N/A					
29	2015-10-08	5	0.3	#N/A					
30	2015-10-08	5	0.3	#N/A					
31	2015-10-08	5	0.3	#N/A					
32	2015-10-08	5	0.3	#N/A					
33	2015-10-08	5	0.3	#N/A					
34	2015-10-08	5	0.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

SQLite Query

VIEW

- All
- Date
- Test voltage (V)
- Current (A)
- Voltage Taps at CLR B
- Voltage Tap readings at CLR B (V)
- Drop Difference at CLR B (from previous tap) (V)
- Voltage Taps at VT B B
- Voltage Tap readings at VT B B (V)
- Drop Difference at VT B B (V)
- Difference (V)
- Comments

WHERE (optional)

Date: > 2015-01-01 (YYYY-MM-DD)

Test voltage: < 10 (V)

Current: < 1 (A)

Voltage taps at CLR B: [dropdown] [dropdown]

Voltage tap readings at CLR B: [dropdown] (V)

Drop difference at CLR B: [dropdown] (V)

Voltage taps at VT B B: [dropdown] [dropdown]

Voltage tap readings at VT B B: [dropdown] (V)

Drop difference at VT B B: [dropdown] (V)

Difference: [dropdown] (V)

Apply Done Clear

Query Box

SQLite Query X

VIEW

- All
- Date
- Test voltage (V)
- Current (A)
- Voltage Taps at CLRB
- Voltage Tap readings at CLRB (V)
- Drop Difference at CLRB (from previous tap) (V)
- Voltage Taps at VTTB
- Voltage Tap readings at VTTB (V)
- Drop Difference at VTTB (V)
- Difference (V)
- Comments

WHERE (optional)

Date	<input type="text"/>	<input type="text"/>	(YYYY-MM-DD)
Test voltage	<input type="text"/>	<input type="text"/>	(V)
Current	<input type="text"/>	<input type="text"/>	(A)
Voltage taps at CLRB	<input type="text"/>	<input type="text"/>	
Voltage tap readings at CLRB	<input type="text"/>	<input type="text"/>	(V)
Drop difference at CLRB	<input type="text"/>	<input type="text"/>	(V)
Voltage taps at VTTB	<input type="text"/>	<input type="text"/>	
Voltage tap readings at VTTB	<input type="text"/>	<input type="text"/>	(V)
Drop difference at VTTB	<input type="text"/>	<input type="text"/>	(V)
Difference	<input type="text"/>	<input type="text"/>	(V)

#N/A

#N/A

#N/A

#N/A

#N/A


SQLite For Excel Program (Insert)

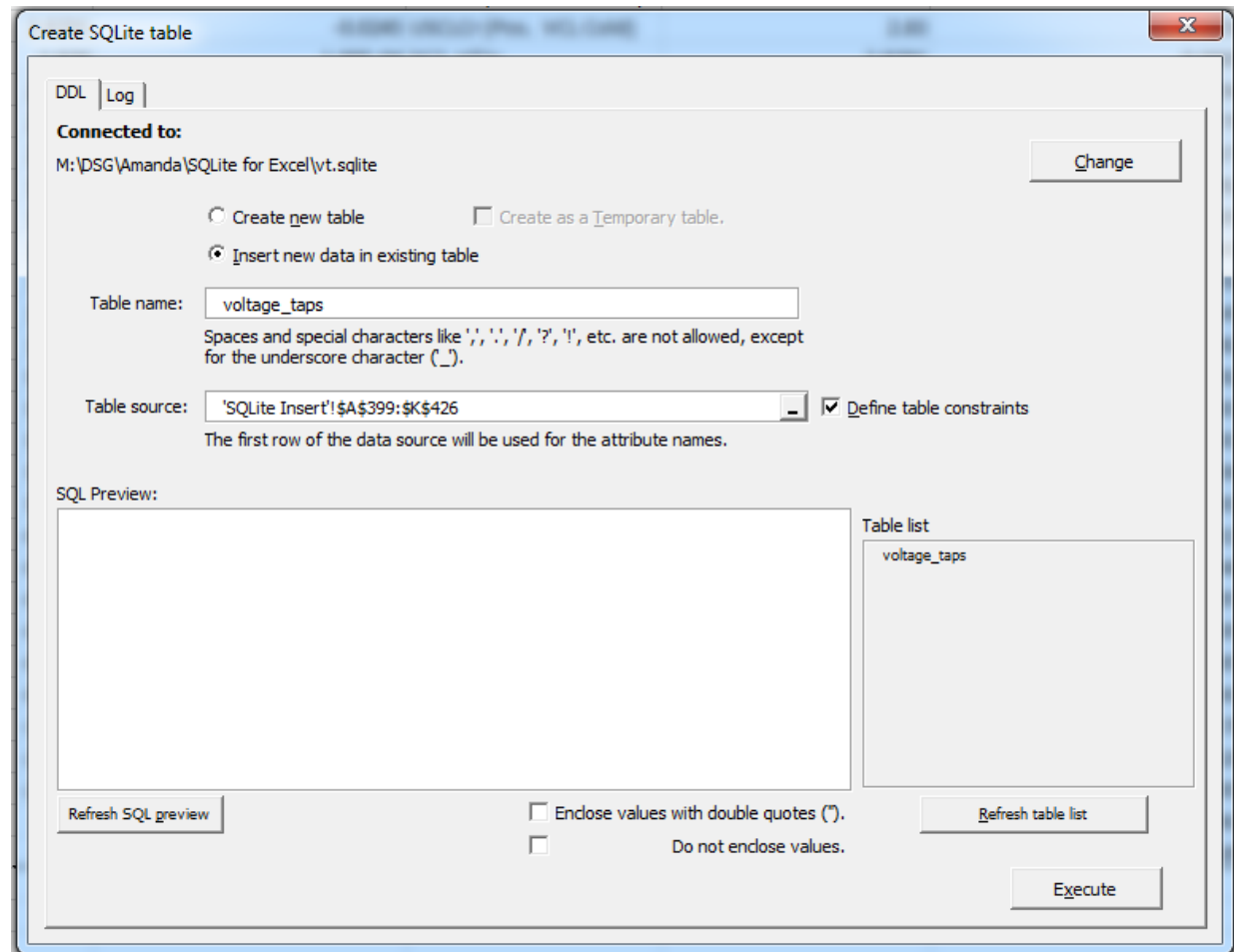
- To insert data into database, fill second worksheet with data.
- Click Create/Add SQLite table

The screenshot shows the XLSQLite application window with the 'Database operations' ribbon selected. The main area displays a table with the following data:

	A	B	C	D	E	F	G
1	date	test_voltage_V	current_A	vt_at_CLRB	vt_readings_at_CLRB_V	drop_difference_at_CLRB_V	vt_at_VTTB
396	2015-10-12	5	0.3	SSPL_VT24	-2.1116	-0.0596	SSPL_VT24r
397	2015-10-12	5	0.3	DSCLC (Neg VCL Cold)			DSCLCr (Neg VCL Cc
398	2015-10-12	5	0.3	DSCLW (Neg VCL Warm)			DSCLW (Neg. VCL W
399	2015-12-03	5	0.3	USCLW (Pos. VCL Warm)	2.8046		USCLW (Pos. VCL W
400	2015-12-03	5	0.3	USCLC (Pos. VCL Cold)	2.8291	-0.0245	USCLCr (Pos. VCL C
401	2015-12-03	5	0.3	SC2_VT1	2.829	1.00E-04	SC2_VT1r
402	2015-12-03	5	0.3	SC2_VT2	2.4902	0.3388	SC2_VT2r
403	2015-12-03	5	0.3	SC2_VT3	2.3219	0.1683	SC2_VT3r
404	2015-12-03	5	0.3	SC2_VT4	2.1345	0.1874	SC2_VT4r
405	2015-12-03	5	0.3	SC2_VT5	1.8585	0.276	SC2_VT5r
406	2015-12-03	5	0.3	SSPL_VT6	1.8576	0.0009	SSPL_VT6r
407	2015-12-03	5	0.3	SC1_VT7	1.8534	0.0042	SC1_VT7r
408	2015-12-03	5	0.3	SC1_VT8	1.2563	0.5971	SC1_VT8r
409	2015-12-03	5	0.3	SC1_VT9	1.1316	0.1247	SC1_VT9r
410	2015-12-03	5	0.3	SC1_VT10	1.0497	0.0819	SC1_VT10r
411	2015-12-03	5	0.3	SC1_VT11	0.8237	0.226	SC1_VT11r
412	2015-12-03	5	0.3	SC1_VT12	0.3442	0.4795	SC1_VT12r
413	2015-12-03	5	0.3	SC3_SSPL13	0.3433	0.0009	SC3_SSPL13r
414	2015-12-03	5	0.3	SC3_VT14	0.3427	0.0006	SC3_VT14r

SQLite For Excel Program (Insert)

- Select “Insert new data in existing table”
- Click  button
- Highlight data from worksheet
- Click Execute



Conclusion

- Used by anyone unfamiliar to SQLite commands.
- This method can be applied to any database.

