



Reading Rigol DP800 Record (*.ROF) Files with Excel

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Solution: The Rigol DP800 series of power supplies have the option to data log the output voltage and current using the Record feature.

This application note covers how to convert the binary file format native to the record file type (*.ROF) to decimal using HxD (A hex-to-decimal software package) and the ReadDPROF file, a worksheet created using Microsoft Excel 2010.

The end of this document describes the format of the data in the *.ROF file and the Excel functions that were used to convert each data point to decimal.

Steps:

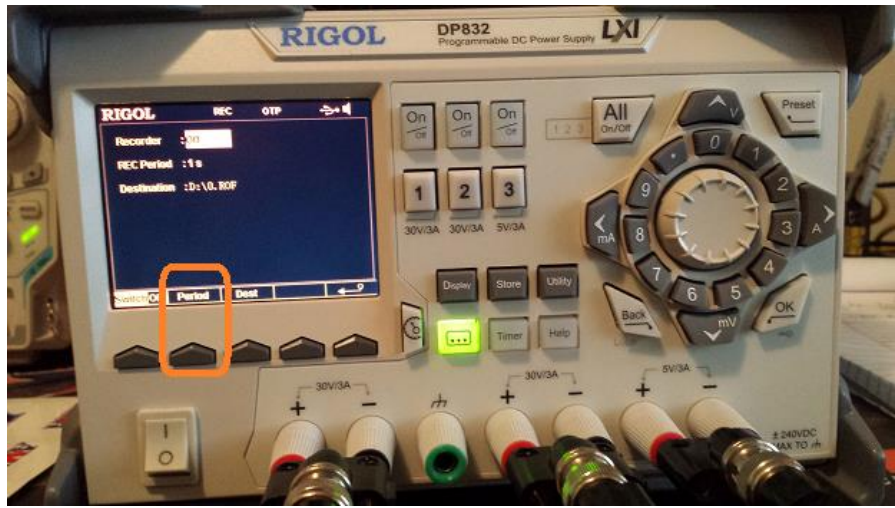
- 1) Configure the DP800 outputs and Devices (DUTs) for your experiment
- 2) Insert a USB stick (FAT32 format) into the USB slot on the back panel of the instrument



3) Enable the record feature by pressing the (...) button on the front panel



- Set the time per sample to record by pressing Period and use the keypad or wheel to increment the time





- Select the destination by pressing Det > Select Browser to highlight the external USB (D:) drive



- Press Browser to enter the D: > Press Save and input the file name





- Press OK when finished entering the filename



- 4) Enable the Recording by pressing SwitchOff. It will turn to SwitchOn when recording is active.

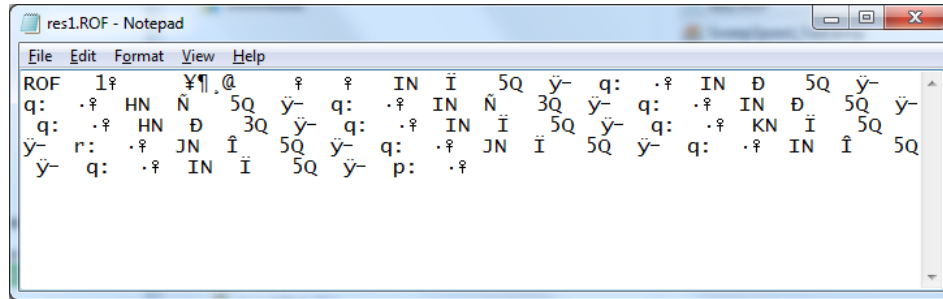


NOTE: The instrument is collecting data as soon as the Recording is enabled.

- 5) Enable the outputs or run the output profile using the Timer function

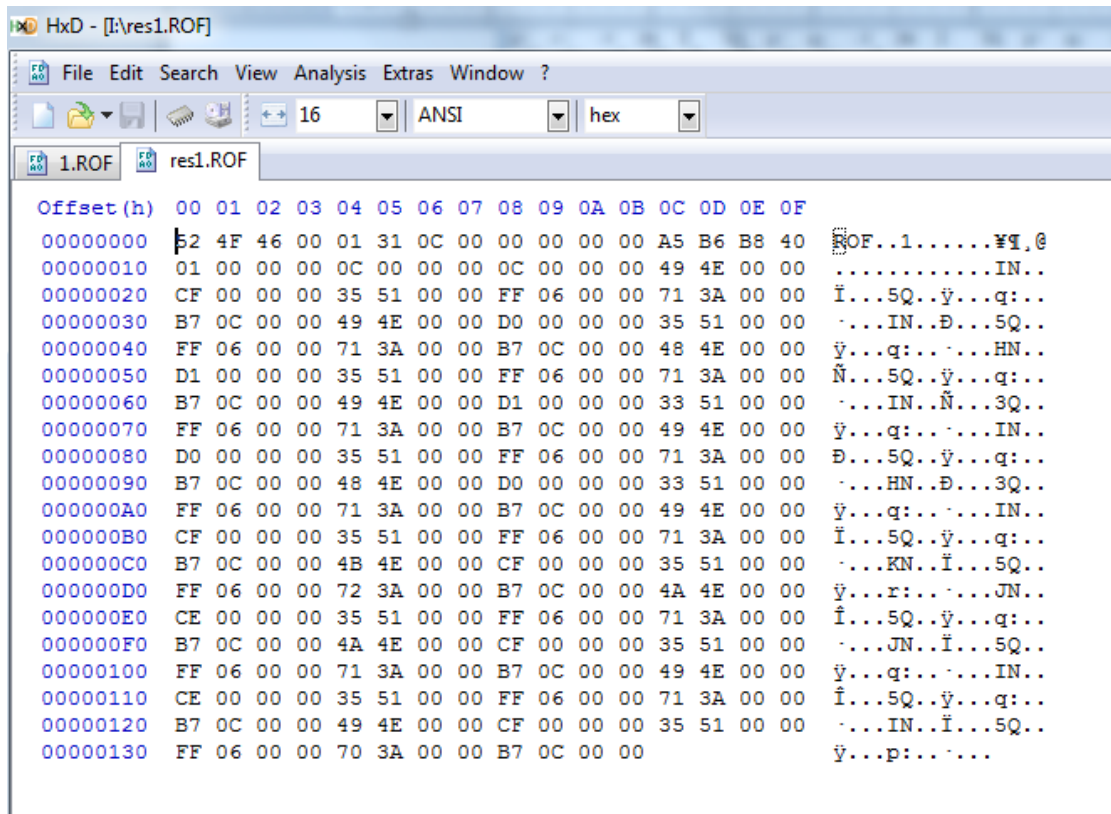


8) Remove the USB stick and insert it into a computer. If you open the *ROF file (res1.ROF is used in this example) you will see the binary values:



9) Open the ROF file using hex to decimal conversion software. In this example, I am using HxD, as shareware program from <http://mh-exus.de/en/hxd/>

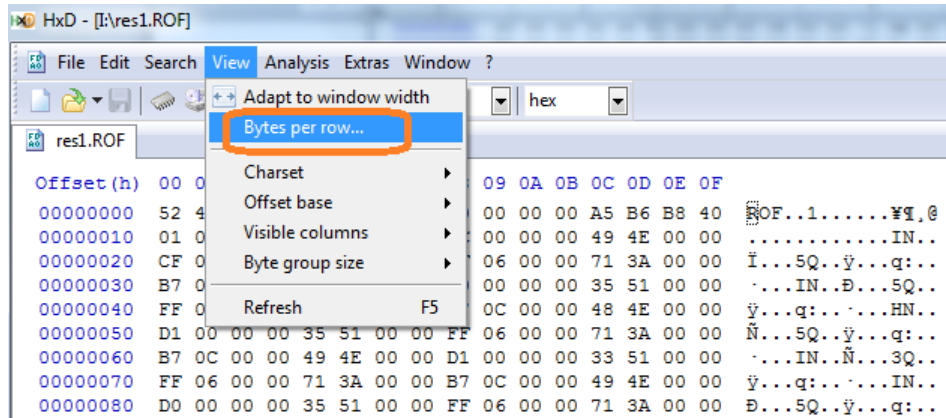
10) Here is the data in HxD



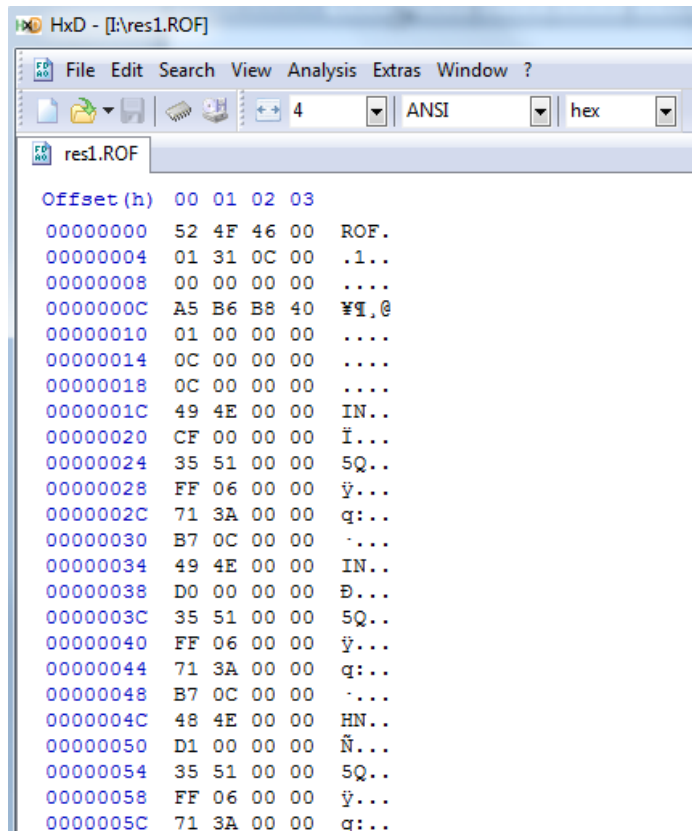


11) Configure HxD bytes-per-row to 4:

Before:

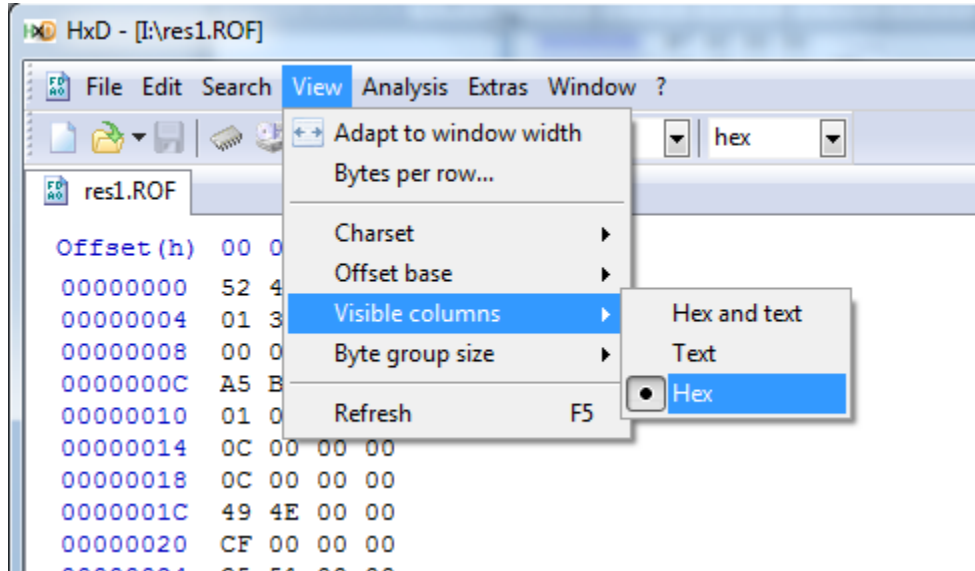


After:

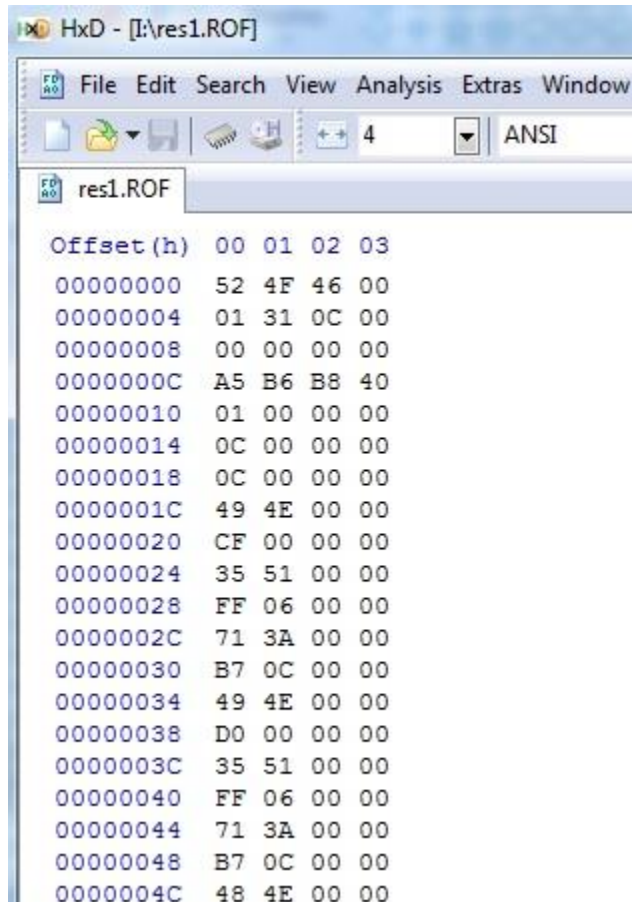




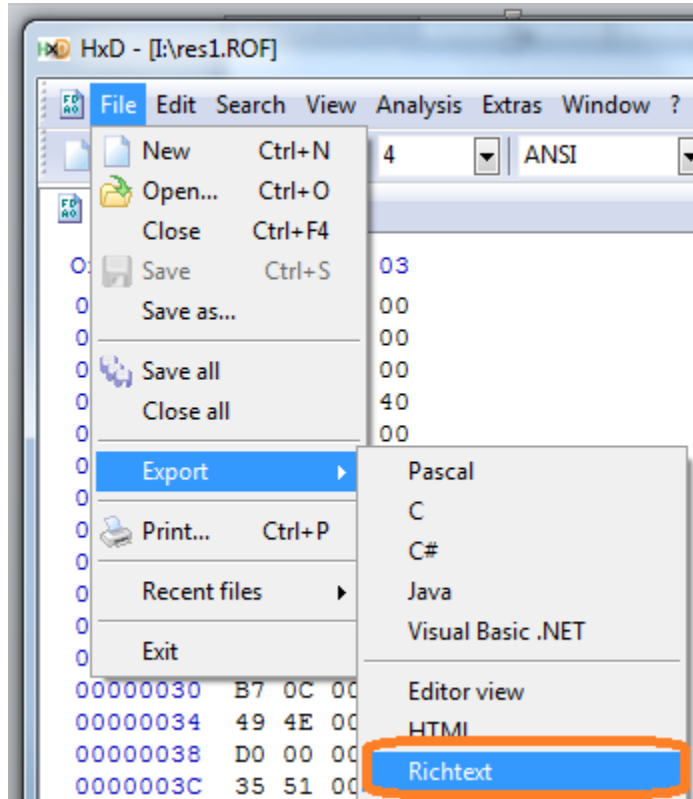
12) Set Visible Columns to Text



13) Now the data should show the Offset and Hex Values

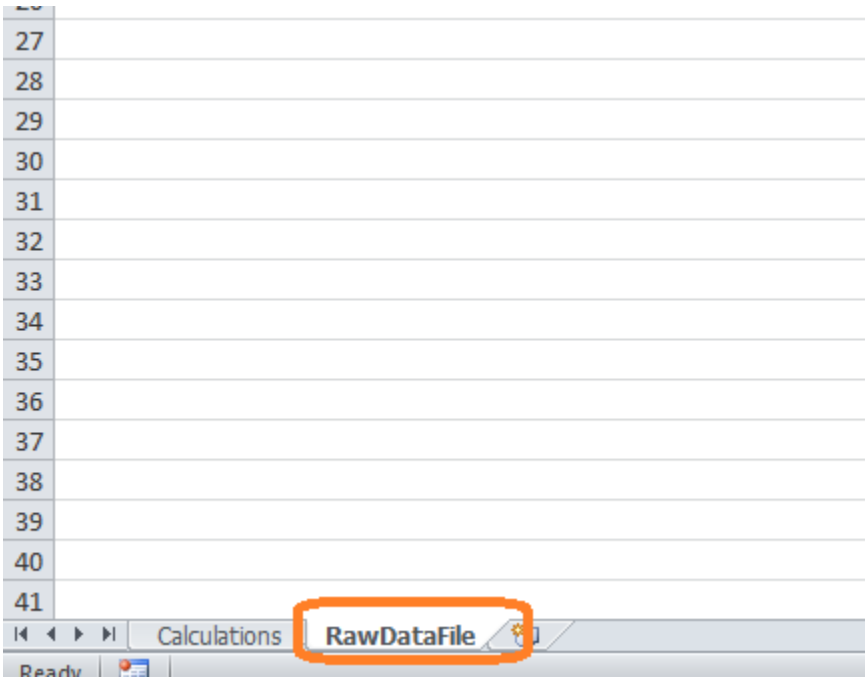


14) Click Export and select



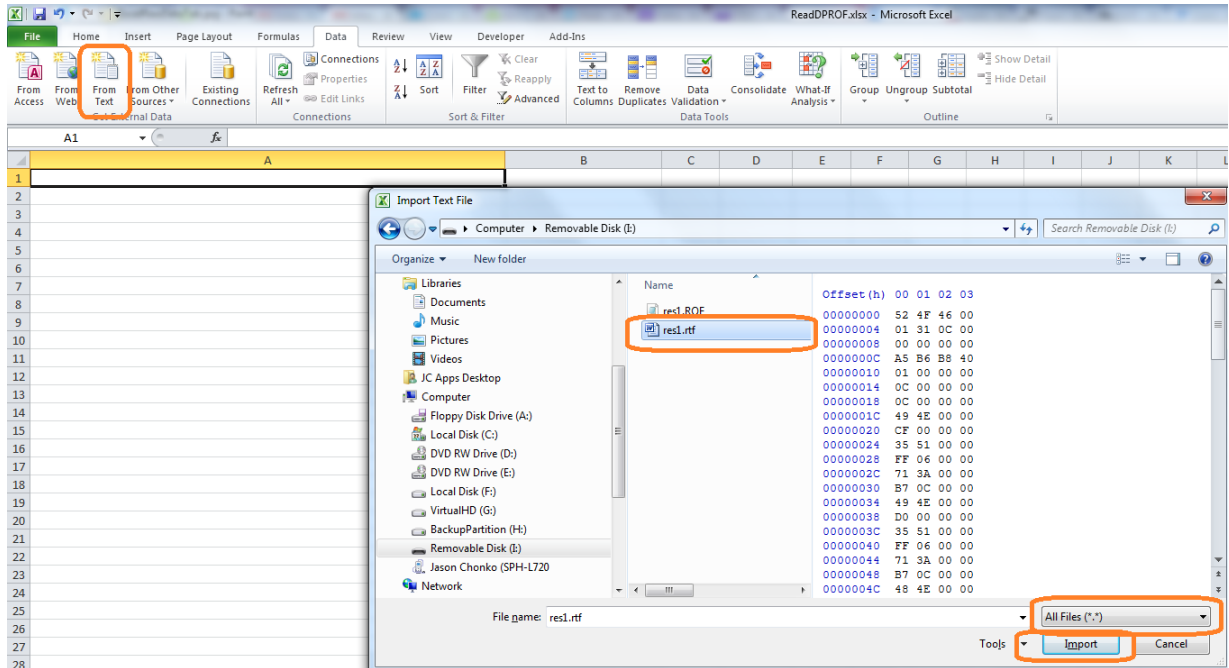


15) Now, open the ReadDPROF.xlsx workbook and select the RawDataFile Tab (at the bottom):

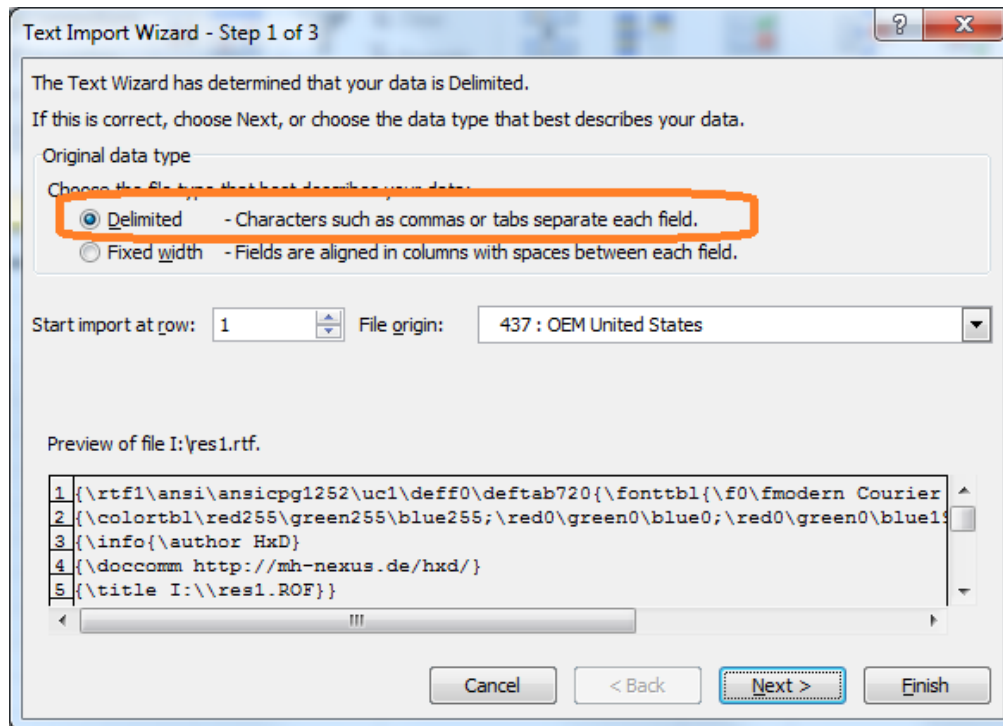




16) Select Data: Import Text, set file type to ALL, select the *.RTF file (this is the rich text conversion file from the HxD program)

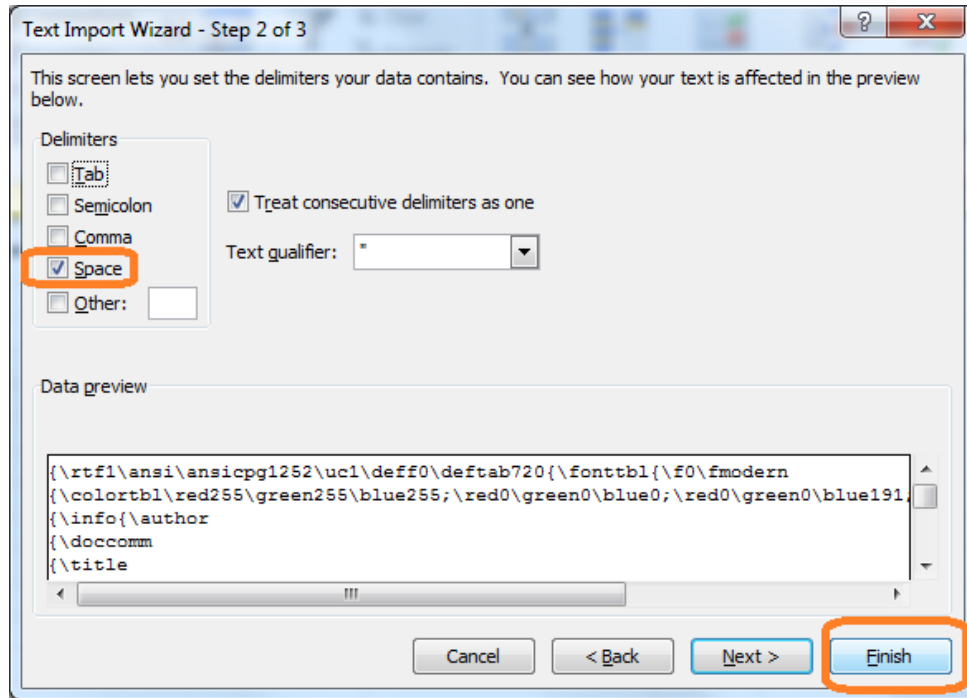


17) Select Delimited and Next

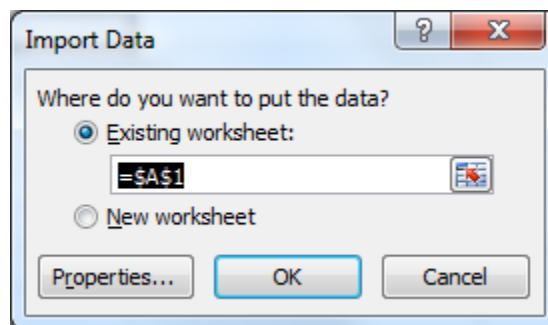




18) Deselect Tab, select Space , and Finish



19) Select Cell A1 for import and press OK



20) Now, the formatted data will be transferred to the Excel Sheet



21) Click on the Calculations tab to see the reformatted data

	A	B	C	H	I	J
2	HEADER	0	52	52		
3		4	1	1		
4		8	0	0		
5		0000000C	A5	A5		
6	Record Period (s)	10	1	1	1	
7	Record Points	14	0C	0C	0C	
8		18	0C	0C		
9	CH1 Voltage 1	0000001C	49	49	73	0.0073
10	CH1 Current 1	20	CF	CF	207	0.0207
11	CH2 Voltage 1	24	35	35	53	0.0053
12	CH2 Current 1	28	FF	FF	255	0.0255
13	CH3 Voltage 1	0000002C	71	71	113	0.0113
14	CH3 Current 1	30	B7	B7	183	0.0183
15	CH1 Voltage 2	34	49	49	73	0.0073
16	CH1 Current 2	38	D0	D0	208	0.0208
17	CH2 Voltage 2	0000003C	35	35	53	0.0053
18	CH2 Current 2	40	FF	FF	255	0.0255
19	CH3 Voltage 2	44	71	71	113	0.0113
20	CH3 Current 2	48	B7	B7	183	0.0183
21	CH1 Voltage 3	0000004C	48	48	72	0.0072
22	CH1 Current 3	50	D1	D1	209	0.0209
23	CH2 Voltage 3	54	35	35	53	0.0053
24	CH2 Current 3	58	FF	FF	255	0.0255
25	CH3 Voltage 3	0000005C	71	71	113	0.0113
26	CH3 Current 3	60	B7	B7	183	0.0183
27	CH1 Voltage 4	64	49	49	73	0.0073
28	CH1 Current 4	68	D1	D1	209	0.0209
29	CH2 Voltage 4	0000006C	33	33	51	0.0051
30	CH2 Current 4	70	FF	FF	255	0.0255
31	CH3 Voltage 4	74	71	71	113	0.0113
32	CH3 Current 4	78	B7	B7	183	0.0183

The raw data format (*ROF) returns the record period, number of record steps, the Voltage, and Current of all channels.

The calculations tab of the Excel sheet is designed for use with the three channel DP800s and is only formatted for the first four data points. You can the final row of cells to cover all of the data points for your application as well as re-label the channels.

Each data point in the **ROF* file is 4 bytes long.

To calculate the actual decimal value, the sheet:

- Reorders the bytes (AA BB CC DD to DD CC BB AA) using the Excel MID function
- Concatenates the bytes using the CONCATENATE Excel function
- Converts hex to decimal using the Excel HEX2DEC function
- Divides the decimal conversion by 10,000.



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