

# DP832/A SCPI CALIBRATION PROCEDURE REV.B

*Before proceeding with the calibration procedure read the Notes at bottom of page*

1. Send the Start Command for CH1:                   :CALibration:Start 11111,CH1
2. Send the Clear Command for CH1:                :CALibration:Clear CH1,ALL
3. Send the Reset Command:                         \*RST
4. Send the CH1 Output On Command :             :OUTPUT CH1,ON
5. Calibration commands: 1<sup>st</sup> Set the DP832 Cal. Point and measure output. 2<sup>nd</sup> Send measured value to DP832.
  - 5.a For CH1 - DAC-V (voltage) Steps 0 to 35  
Step 0: Set Cal. Point for CH1 ADC-V       :CALibration:Set CH1,V,0,0.2V,1   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,V,0,'measured',1  
Through To           [ Ref. Table 1 for values between Step 0 and last Step {re. Note 3}]  
Step 35: Set Cal. Point for CH1 DAC-V     :CALibration:Set CH1,V,35,32V   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,V,35,'measured',1
  - 5.b For CH1 - ADC-V (voltage) Steps 0 to 10  
Step 0: Set Cal. Point for CH1 ADC-V       :CALibration:Set CH1,V,0,0V,0    Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,V,0,'measured',0  
Through To           [ Ref. Table 1 for values between Step 0 and last Step {re. Note 3}]  
Step 10: Set Cal. Point for CH1 ADC-V     :CALibration:Set CH1,V,10,32V,0   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,V,10,'measured',0
  - 5.c For CH1 - DAC-I (current) Steps 0 to 14  
Step 0: Set Cal. Point for CH1 DAC-I       :CALibration:Set CH1,C,0,0.1A,1   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,C,0,'measured',1  
Through To           [ Ref. Table 1 for values between Step 0 and last Step {re. Note 3}]  
Step 14: Set Cal. Point for CH1 DAC-I     :CALibration:Set CH1,C,14,3.2A,1   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,C,14,'measured',1
  - 5.d For CH1 - ADC-I (current) Steps 0 to 6  
Step 0: Set Cal. Point for CH1 ADC-I       :CALibration:Set CH1,C,0,0A,0    Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,C,0,'measured',0  
Through To           [ Ref. Table 1 for values between Step 0 and last Step {re. Note 3}]  
Step 6: Set Cal. Point for CH1 ADC-I     :CALibration:Set CH1,C,6,3.2A,0   Measure value w/DMM.  
Send measurement to DP832                :CALibration:MEAS CH1,C,6,'measured',0
6. Send the Output Off Command:                 :OUTPUT CH1,OFF
7. Send the End Command:                         :CALibration:End 12/31/2014,CH1   Date format MO/DY/YEAR  
*Note: Replace '12/31/2014' above with your Cal. Date.*
8. Repeat above for CH2. Steps and values for CH2 are identical to CH1. *Change all CH1s to CH2.*
9. Repeat above for CH3. Use the Steps and values in 'Table 1' for CH3. For 5.a CH3 DAC-V use Steps 0 to 12; 5.b ADC-V Steps 0 to 10; 5.c DAC-I Steps 0 to 11; and 5.d ADC-I Steps 0 to 5. *Change all CHs to CH3.*

## Notes:

1. Requires **Rigol UltraSigma** to send SCPI commands to the DP832, and a 6 ½ **Digit DMM** for measurements.
2. The '**larger size number**' in the SCPI command is the corresponding **STEP** number from Table 1.
3. Use the corresponding voltage (V) / current (A) values from Table 1 for Step 0 through to the last Step.
4. The entry '**measured**' is the DMM measured value (to be inserted here) from 'Set Cal. Point' measurement results.
5. For other **than CH1 calibration**, use the corresponding CH number (**CH2** or **CH3**) throughout the procedure.

Credits: This procedure was derived from the following source by EEVblog'er 'TooOldForThis', and we are all to be grateful to him.  
Any incorrect information presented in this procedure is my responsibility, due to my misrepresenting 'TooOldForThis' works. ted572  
<http://www.eevblog.com/forum/testgear/rigol-dp832-firmware-updates-and-bug-list/msg556101/#msg556101>

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**Table 1: Calibration Target Values:**

This is a table of target values to use with the SCPI Set Cal. Point command for the DP832/A.

Enter the values exactly as shown. Note: The STEP number begins at zero (0, 1, 2, 3, . . . n).

STEP <step>	CH1 & CH2				CH3			
	DAC-V <dev>=1	ADC-V <dev>=0	DAC-I <dev>=1	ADC-I <dev>=0	DAC-V <dev>=1	ADC-V <dev>=0	DAC-I <dev>=1	ADC-I <dev>=0
0	0.2V	0V	0.1A	0A	0.1V	0V	0.1A	0A
1	0.5V	0.05V	0.25A	0.01A	0.2V	0.005V	0.5A	0.1A
2	1.2V	0.1V	0.5A	0.1A	0.4V	0.01V	1A	1A
3	2V	0.5V	0.8A	1A	0.85V	0.02V	1.25A	2A
4	3.2V	1V	1A	2A	1.2V	0.05V	1.5A	3A
5	4.1V	5V	1.25A	3A	1.8V	0.1V	1.75A	3.2A
6	5.2V	10V	1.5A	3.2A	2.55V	0.5V	2A	
7	6.9V	12.8V	1.75A		3.1V	1V	2.25A	
8	7.5V	20V	1.9A		3.4V	3V	2.5A	
9	8.7V	30V	2.15A		4.1V	5V	2.75A	
10	10.1V	32V	2.35A		4.5V	5.3V	3A	
11	11.8V		2.5A		5V		3.2A	
12	12.6V		2.75A		5.3V			
13	13.5V		3A					
14	15V		3.2A					
15	15.8V							
16	16.5V							
17	17.3V							
18	18.5V							
19	19.1V							
20	19.9V							
21	20.2V							
22	20.8V							
23	21.8V							
24	22.4V							
25	22.7V							
26	23.9V							
27	24.3V							
28	25.7V							
29	26.9V							
30	27.9V							
31	28.5V							
32	28.9V							
33	29.8V							
34	30.2V							
35	32V							

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