The New Benchmark of Power Supply- ELITE U Series

INTRODUCTION

Adaptable with universal power source, ELITE U series power supply also provides high accuracy power output and long time stability as ELITE series. Along with wide range applications, Wealtec ELITE U displayed the actual voltage and current output of running power supply, as follows, to prove the accuracy and stability of ELITE U power supply family. As testing with full range setting for accuracy and stability, Wealtec proudly claims the ELITE and ELITE U series as the new benchmark of power source for every laboratory.

EQUIPMENTS

- ELITE 200U x1; ELITE 300U x1; ELITE 600U x1 (Wealtec)
- True RMS Multi-meter (Fluke)
- Series of Cement resistors

METHOD

1. Apply power supply with cement resisters as in figure 1 (A) when testing with voltage output, and as in figure 1 (B) when testing the current output.
2. Get the mean value with three tests.
3. Calculate the DV value by following formula.

$$DV\% = \frac{\text{Actual output} - \text{Setting Value}}{\text{Setting Value}} \times 100\%$$

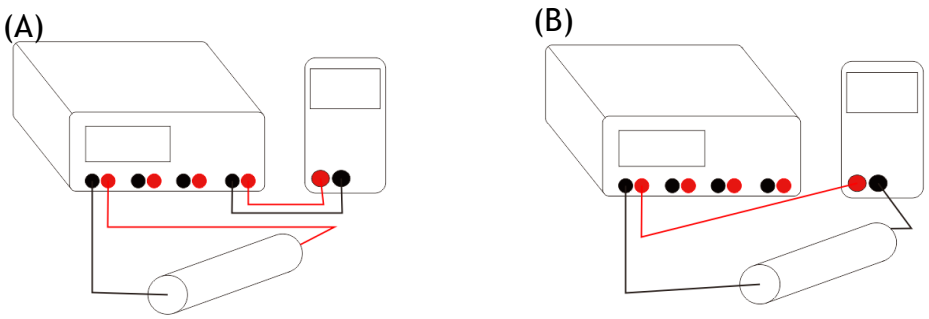


Figure 1. *Connection of testing for (A) Voltage and (B) Current.*

RESULTS

Table 1. Theoratical and Practical Voltage Output

ELITE 200 U			ELITE 300 U			ELITE 600 U		
Set V	Mean	DV%	Set V	Mean	DV%	Set V	Mean	DV%
5	5.05	0.93	3	3.01	0.33	5	5.01	0.15
6	6.01	0.17	4	4.01	0.30	6	6.00	0.06
7	6.97	-0.38	5	4.98	-0.39	7	6.99	-0.19
8	7.98	-0.25	10	10.03	0.33	10	9.99	-0.10
9	9.01	0.07	30	30.06	0.20	20	19.94	-0.32
10	9.97	-0.30	40	39.98	-0.04	30	29.86	-0.47
20	20.21	0.88	50	50.01	0.02	50	49.72	-0.55
30	30.09	0.31	70	70.20	0.28	80	79.57	-0.54
40	40.02	0.04	80	80.10	0.12	90	89.50	-0.56
50	50.06	0.13	90	90.17	0.18	100	100.17	0.17
60	60.15	0.24	100	100.10	0.10	150	150.37	0.24
70	70.07	0.10	120	120.10	0.08	200	200.53	0.27
80	80.20	0.25	140	140.10	0.07	250	250.80	0.32
90	90.17	0.19	160	160.20	0.12	300	301.00	0.33
100	100.13	0.13	180	180.15	0.08	350	351.10	0.31
120	120.13	0.11	200	200.10	0.05	400	401.70	0.42
140	140.23	0.17	225	225.00	0.00	450	452.10	0.47
160	160.47	0.29	250	249.93	-0.03	500	502.43	0.49
180	180.70	0.39	275	274.87	-0.05	550	553.20	0.58
200	200.87	0.43	300	299.90	-0.03	600	603.50	0.58

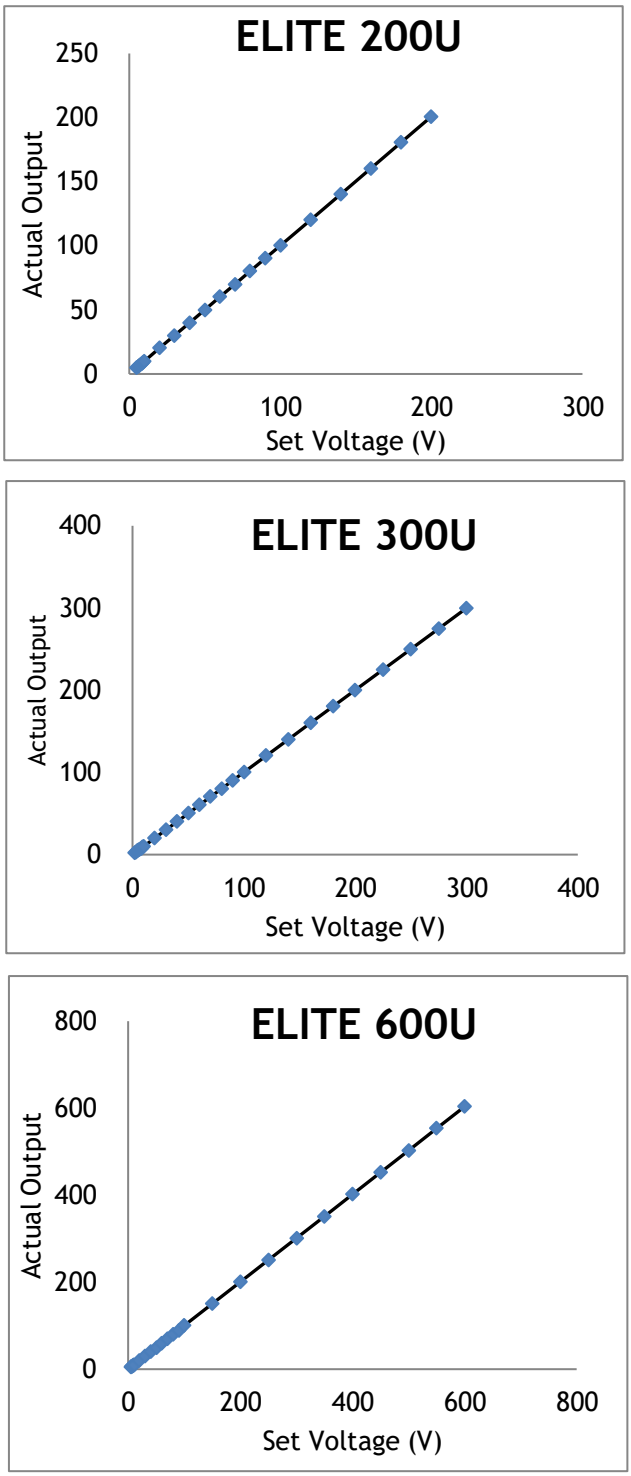
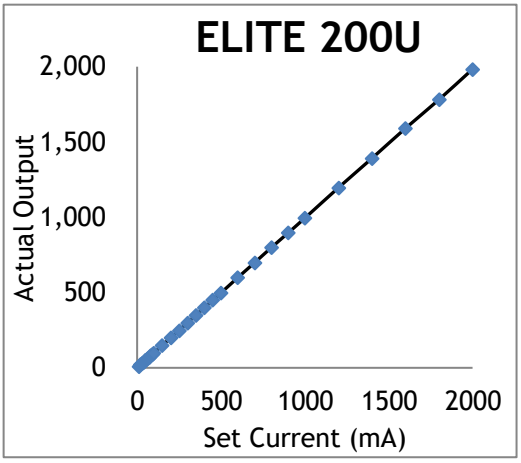
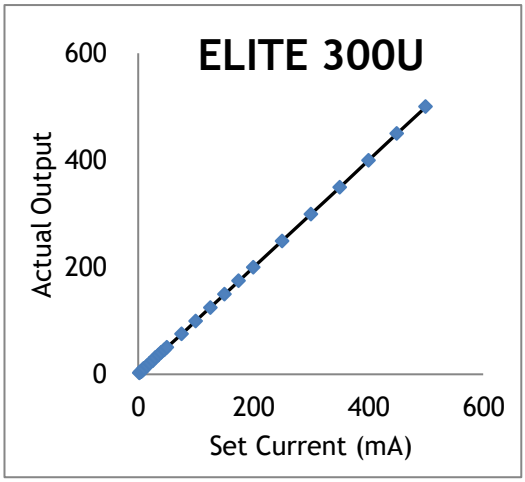


Figure 2. *Voltage Output of ELITE 200U, 300U and 600U.*

Table 2. Theoratical and Practical Current Output

ELITE 200 U			ELITE 300 U			ELITE 600 U		
Set mA	Mean	DV%	Set mA	Mean	DV%	Set mA	Mean	DV%
10	10.00	0.00%	3	3.01	0.33%	1	1.02	2.00%
20	20.00	0.00%	4	4.04	1.07%	2	2.02	0.83%
30	30.00	0.00%	5	5.04	0.75%	3	3.01	0.22%
40	40.00	0.00%	6	6.05	0.77%	4	4.00	0.00%
50	49.33	-1.35%	7	7.01	0.19%	5	4.96	-0.80%
60	59.67	-0.56%	8	8.01	0.12%	6	5.95	-0.89%
70	69.33	-0.96%	9	9.13	1.46%	7	6.94	-0.90%
80	79.33	-0.84%	10	10.12	1.19%	8	7.93	-0.83%
90	89.33	-0.75%	15	15.06	0.40%	9	8.89	-1.22%
100	99.33	-0.67%	20	20.26	1.30%	10	9.88	-1.20%
150	149.33	-0.45%	25	25.15	0.61%	20	19.75	-1.25%
200	199.33	-0.33%	30	30.33	1.08%	30	29.57	-1.42%
250	248.67	-0.54%	35	35.33	0.94%	40	39.43	-1.43%
300	299.33	-0.22%	40	40.47	1.17%	50	49.30	-1.40%
350	349.67	-0.10%	45	45.50	1.10%	75	73.93	-1.42%
400	398.67	-0.33%	50	50.57	1.12%	100	98.50	-1.50%
450	448.67	-0.30%	75	74.57	-0.58%	200	197.90	-1.05%
500	498.00	-0.40%	100	99.67	-0.33%	250	247.40	-1.04%
600	599.00	-0.17%	125	124.70	-0.24%	300	296.97	-1.01%
700	698.00	-0.29%	150	149.23	-0.51%	350	347.03	-0.85%
800	798.33	-0.21%	175	174.23	-0.44%	400	396.00	-1.00%
900	895.67	-0.48%	200	199.40	-0.30%	450	446.00	-0.89%
1000	994.33	-0.57%	250	249.17	-0.33%	500	496.00	-0.80%
1200	1196.00	-0.33%	300	298.93	-0.36%	550	546.00	-0.73%
1400	1391.33	-0.62%	350	348.60	-0.40%	600	595.00	-0.83%
1600	1590.67	-0.59%	400	399.37	-0.16%	650	645.00	-0.77%
1800	1781.67	-1.03%	450	449.67	-0.07%	700	695.00	-0.71%
2000	1983.67	-0.82%	500	499.33	-0.13%	750	745.00	-0.67%





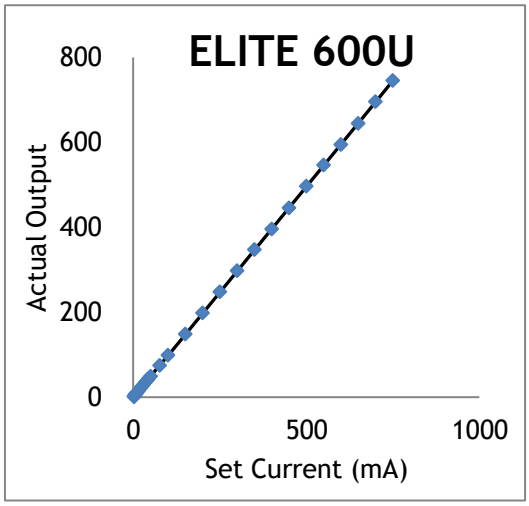


Figure 3. *Current Output of ELITE 200U, 300U and 600U.*

Table 3. *Deviation and accurancy of ELITE U power supplies*

Model	Current Range	Deviation	Accuracy	Voltage Range	Deviation	Accuracy
Elite 200U	0.01 - 2.0 A	-0.46 %	99.54 %	5 ~ 200 V	0.20 %	99.80 %
Elite 300U	3 -500 mA	0.44 %	99.56 %	3 ~ 300 V	0.12 %	99.88 %
Elite 600U	1 -750 mA	-0.86 %	99.14 %	5 ~ 600 V	-0.02 %	99.98 %

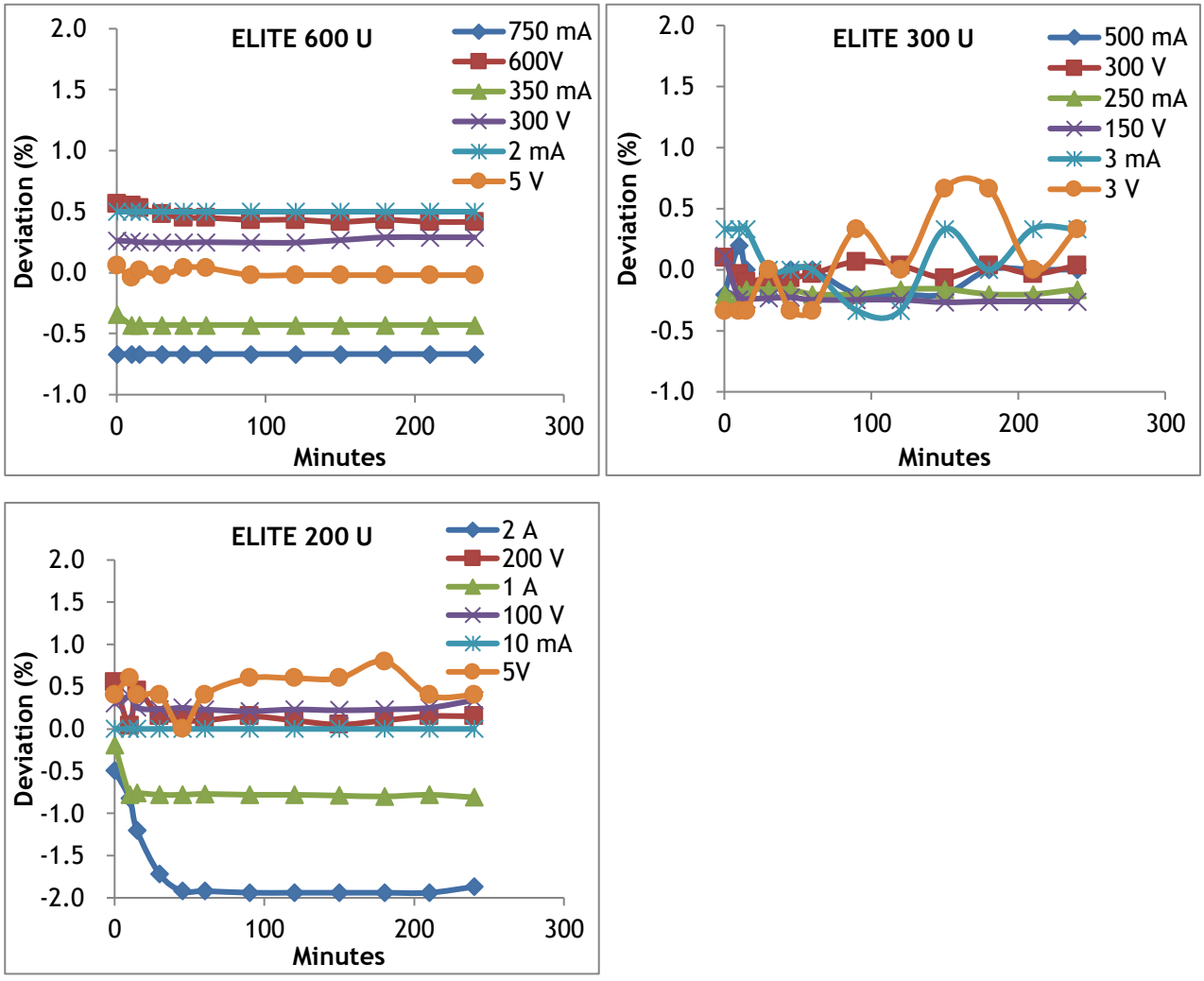


Figure 4. *4 hours stability of ELITE 200U, 300U and 600U.*

DISSCUSION

ELITE U series not only remains the high accuracy and stability features of the ELITE series power supply, but also provides higher setting resolution and better controlling mechanism. As shown in table 1 and 2, both theoretical value and practical value are closely related to each other in both current and voltage setting. As evaluating with the true values, in full range voltage setting, the deviation between setting value and actual output were all less than 1% in whole ELITE U series of power supply as in table 1. The deviations of current were all less than 2% as listed in table 2. ELITE U power supplies guarantee having excellent accuracy in every model. It's critical to have full range setting under 1% and 2% deviation especially under the minimum setting.

Besides, ELITE U series also have very good stability within 4 hours operation. As in figure 4, different outputs of these units were stay within the 1% voltage or 2% current differences. Especially for the blotting or transfer procedure in Western Blot, it's highly recommended to use of the accurate and stable ELITE U power supply. It provides excellent transfer quality specifically transferred with a very stable low current. In stability test with 1 A and 2 A in ELITE 300U, the cement resistor got very hot (around 200^{o}C) after an hour operation, and the resistance became higher and lower down the current output. As the result that the deviation become higher but still been controlled lower than 2%.

Applying with PWM technique, the entire ELITE series are designed with high stability and high accuracy no matter running under constant current or voltage. For the power supply selections, all models can be used for working with one unit of semidry or wet transfer blotter. If it's requested to apply with two transfer units, ELITE 600U would be the best choice. With the semidry fast transfer system, the ELITE 200U with high maximum 2A current is the only and best choice. ELITE U series power can be applied to broad applications, every laboratory is recommended to have more than one unit to meet different needs.

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