

# Manson Engineering Industrial Limited

## NSP-M Series Calibration Procedure

Date: 9 Dec., 2015

Equipment Used	Quantity
6-1/2 Digital Multi-meter (DMM)	1
Current Shunt (measurement range >5A, accuracy <0.3%)	1
Electronic Load with CC and CR mode	1

### **Procedure:**

#### A. Model Selection

1. Turn OFF the power supply
2. Press and hold the voltage control knob and current control knob at the same time and then turn ON the NSP power switch, release the voltage control knob and current control knob once LCD display turns on.
3. The display will show the model number : 2050/3630/6016, press the output ON/OFF button until the display show the correct model.
4. Press the voltage control knob to confirm your selection.
5. Turn OFF the power supply and then turn it ON again to complete the selection.

#### B. Voltage Calibration

1. Connect the NSP power supply output terminal to Digital multi-meter.
2. Press and hold the voltage control knob and then turn ON the NSP power switch, release the voltage control knob once LCD display turns on. Now the unit is under calibration mode.
3. Press the output ON/OFF button to make output ON.
4. Calibrate the first reference voltage point, adjust the voltage control knob until the voltage reading in LCD meter equal to the actual output voltage value. Wait a while for few seconds to make sure that the reference figure at LCD meter (second line) is stable and value below 1.000. Press voltage control knob to go to next step.

5. Calibrate the second reference voltage point, adjust the voltage control knob until the voltage reading in LCD meter equal to the actual output voltage value. Wait a while for few seconds to make sure that the reference figure at LCD meter (second line) is stable and value below 1.000. Press voltage control knob to go to next step.

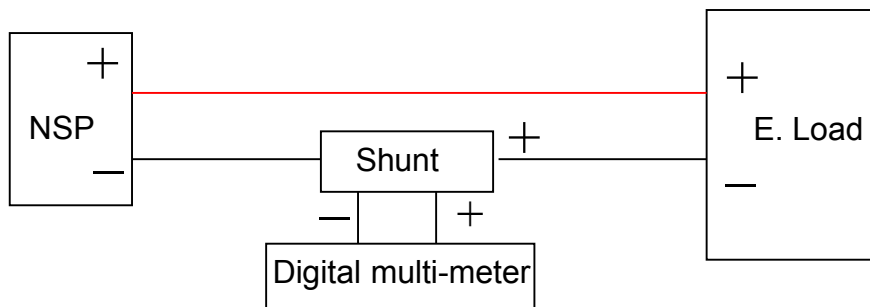
6. Adjust the voltage control knob until the value at LCD meter equal to the actual output value. Once the value at LCD meter become stable within the range 9.8-10.5V, press the voltage control knob to go to next step.

7. Adjust the voltage control knob until the difference between LCD meter reading and actual output voltage less than 2 counts. Press voltage control knob to go to next step (Remark: For model NSP-6016, the set value must higher than 5V)

8. Wait until the voltage stable at  $0.8 \pm 0.1V$ , press the voltage control knob to leave the calibration mode. Turn OFF the NSP power supply and then ON again to complete the calibration data storage.

### C. Current Calibration

1. Connect the NSP power supply to electronic load, digital multi-meter and current shunt as below connection diagram



2. Press and hold the current control knob and then turn ON the NSP power switch, release the voltage control knob once LCD display turns on. Now the unit is under calibration mode.

3. Press the output ON/OFF button to make output ON.

4. Calibrate the first reference current point, set the electronic load to CR mode. Adjust the electronic load until the voltage reading show in LCD meter drops to the specific voltage as list below. Adjust the current control knob until the current value shows in LCD meter equal to the actual current value which measured by the digital multi-meter. Press current control knob to go to next step.

- a. NSP-2050:  $10 \pm 0.5V$
- b. NSP-3630:  $18 \pm 0.5V$
- c. NSP-6016:  $30 \pm 0.5V$

5. Calibrate the second reference current point. Adjust the electronic load until the voltage reading show in LCD meter drops to the specific voltage as list below. Adjust the current control knob until the current value shows in LCD meter equal to the actual current value which measured by the digital multi-meter. Press current control knob to go to next step.

- a. NSP-2050: 10 $\pm$ 0.5V
- b. NSP-3630: 18 $\pm$ 0.5V
- c. NSP-6016: 30 $\pm$ 0.5V

6. Calibrate the third reference current point. Adjust the electronic load until the reading show in LCD meter (second line) equal to the actual current value which measured by the digital multi-meter and make sure the reference figure at LCD meter (first line) is stable and less than 1. Press current control to go to next step.

7. Calibrate the forth reference current point. Adjust the electronic load until the reading show in LCD meter (second line) equal to the actual current value which measured by the digital multi-meter and make sure the reference figure at LCD meter (first line) is stable and less than 1. Press current control to go to next step.

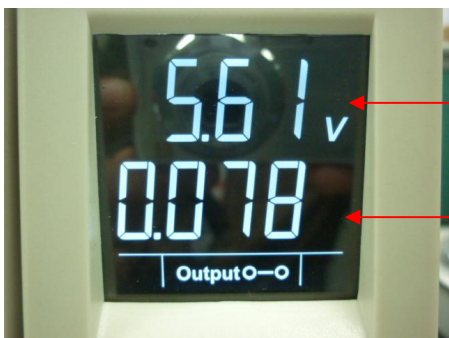
8. Set the electronic load to CC mode and loading current higher than 1.5A. Adjust the current control knob until the reading show in LCD meter equal to the actual current value which measured by the digital multi-meter and make sure the LCD meter is stable. Press current control to go to next step.

9. LCD meter indicates “offs”. Turn off the electronic load. Once the current reading in LCD meter become stable, press current control to go to next step.

10. LCD meter indicates “turn”, set the electronic load to CR mode and adjust the electronic load until the actual current become 0.9 $\pm$ 0.05A. Press the current control knob to leave the calibration mode. Turn OFF the NSP power supply and then ON again to complete the calibration data storage.

Calibration completed.

Photo below to show the LCD meter during voltage calibration mode



First line

Second line

Photo below to show the LCD meter during current calibration mode



First line

Second line