

SPD adjustment method by manual

Calibration instrument:

1. 5.5/6.5 digital multimeter(SDM3055/SDM3065X) one QTY
2. DC electronic load with a Min readback resolution 0.1mV/0.1mA (SDL1020X/SDL1030X) one QTY

Calibration instructions:

The parameters to be calibrated are the voltage setting value/voltage display value and current setting value/current display value of the two channels.

All its parameters are linearly calibrated, and its fitted function is $Y = aX + b$; where 'a' is the linear coefficient and 'b' is Offset.

In order to find the parameters a and b, we must know the two corresponding points (x1, y1), (x2, y2). Then we can calculate their the Parameters a and b. Then use the SCPI command to write to device.

Method steps:

1. Clear parameters.

The command '*CALCLS' is used to clear the corresponding parameters 'a' and 'b'. Let them return to the default $a = 1$; $b = 0$.

*CALCLS <NR>

NR is the number.

- 0: Clear the voltage setting coefficients a and b of channel 1 to default values.
- 1: Clear the voltage display coefficients a and b of channel 1 to default values.
- 2: Clear the current setting coefficients a and b of channel 1 to default values.
- 3: Clear the current display coefficients a and b of channel 1 to default values.
- 4: Clear the voltage setting coefficients a and b of channel 2 to default values.
- 5: Clear the voltage display coefficients a and b of channel 2 to default values.
- 6: Clear the current setting coefficients a and b of channel 2 to default values.
- 7: Clear the current display coefficients a and b of channel 2 to default values.
- 8: Clear all calibration coefficients a and b of channel 1 and channel 2 to default values.

2. Calibrate the voltage setting and voltage display value of channel 1 or 2.

'CALibration:VOLTage <NR1>,<NR2>,<NR3>'

This command is use to calibrate the voltage value.

NR1:

CH1: Calibrate the CH1 parameters.

CH2: Calibrate the CH2 parameters.

NR3:

The actual value measured with multimeter.

NR2:

- 1: The first measure value of NR3
- 2: The second measure value of NR3

Method:

- (1) Set the voltage of channel(1or2) to 1V, then output this channel, use the multimeter to measure the actual output voltage of this channel as the value of NR3
- (2) Input calibration command 'CALibration:VOLTage CH<x>,1,<NR3>' (example :CALibration:VOLTage ch1,1,1.0234)
- (3) Set the voltage of channel(1or2) to 25V, then output this channel, use the multimeter to measure the actual output voltage of this channel as the value of NR3
- (4) Input calibration command "CALibration:VOLTage CH<x>,2,<NR3>" example: CALibration:VOLTage ch1,2,25.0234)
- (5) After step (4) is completed, the voltage set value and voltage display value coefficients a and b have been calibrated, so that the relevant coefficients can be saved to FLASH by the " * CALST" command.

Note: The voltage set value and voltage display value are calibrated at the same time. After the second point of calibration data is entered, the calibration coefficients a and b are calculated.

3. Calibrate the current display value of channel 1 or channel 2(take the channel 1 as a example)

There is a series connection between the multimeter, load and the power supply. Please refer to the attached picture below.

CALibration:CURRent <NR1>,<NR2>,<NR3>

This command is used to calibrate the current values.

NR1:

- CH1 Calibrate the CH1 parameters.
- CH2 Calibrate the CH2 parameters.

NR3:

The actual value measured with multimeter.

NR2:

When the NR2 value is 1, the NR3 should be the first measured current value. This is for the display value calibration.

When the NR2 value is 2, the NR3 should be the second measured current value. This is for the display value calibration.

When the NR2 value is 3, the NR3 should be the first settings current value. This is for the setting value calibration.

When the NR2 value is 4, the NR3 should be the second settings current value. This is for the setting value calibration.

Method:

- (1) Connect the channel (which is waiting to be calibrated) to the port of electronic load, set the

load to CC mode and the constant current value is set to 100mA.

- (2) Set a voltage of the channel which is waiting to be calibrated, eg, 10V. The current setting value is 3A and then activate that channel.
- (3) Read the current value from multimeter, it will be the NR3 value, as the first calibration value. Enter the command 'CALibration: CURRent ch1,1,NR3'.
- (4) Set the load to CC mode and the constant value is 2.5A. The power supply keep the settings.
- (5) Read the current value from multimeter, it will be the second NR3 value. Then enter the command 'CALibration:CURRent ch1,2,NR3'. When this command is finished, the related coefficients 'a' and 'b' will be changed.
- (6) Save the coefficients with the command '*CALST'.

4. Calibrate the current setting value of channel 1 or channel 2(take the channel 1 as a example)

There is a series connection between the multimeter, load and the power supply. Please refer to the attached picture below.

Method:

- (1) Connect the channel (which is waiting to be calibrated) to the port of electronic load, set the load to CC mode and the constant current value is set to 3A.
- (2) Set a voltage of the channel which is waiting to be calibrated, eg, 10V. The current setting value is 100mA and then activate that channel.
- (3) Read the current value from multimeter, it will be the NR3 value, as the first calibration value. Enter the command 'CALibration: CURRent ch1,3,NR3'.
- (4)Keep the settings of electronic load. Then change the power supply's current setting value to 2.5A.
- (5) Read the current value from multimeter, it will be the second NR3 value. Then enter the command 'CALibration:CURRent ch1,4,NR3'. When this command is finished, the related coefficients 'a' and 'b' will be changed.
- (6) Save the coefficients with the command '*CALST'.

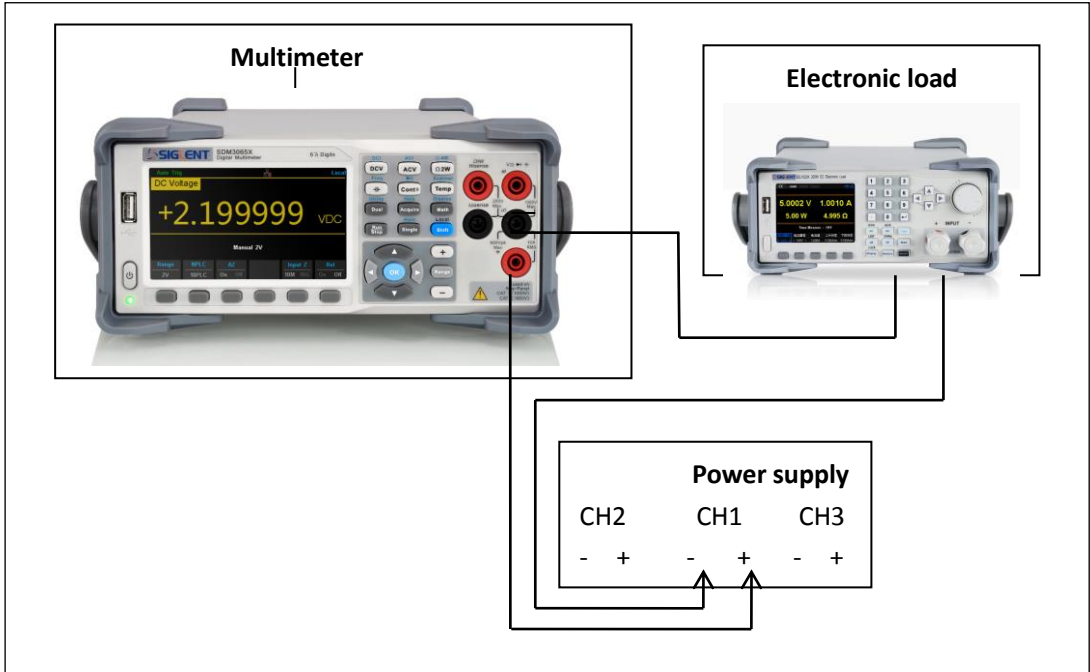
Note: The current setting value and the display value are calibrated individually. The 'NR2' of the command is showing the input value is setting value or display value, including the first value or the second value.

5.Save the coefficients to internal flash.

The '*CALST' command will save the coefficients to the flash.

Diagram:

Current calibration:



Voltage calibration:

