Sorensen

SL-SERIES

SLM DC MODULAR/ SLH HIGH POWER DC ELECTRONIC LOADS

Calibration Manual

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SECTION 1
OPERATION DESCRIPTION

This section provides a brief orientation for how to enter, navigate, adjust and store settings, and exit the calibration mode.
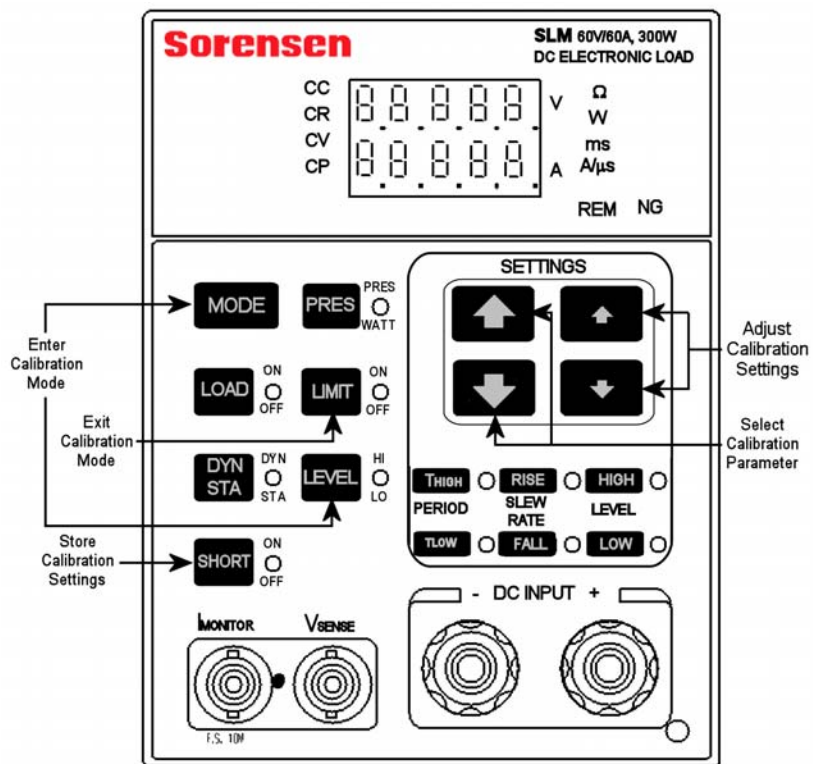
Figure 1-1. SLM Series Front Panel

1.1   NAVIGATION AND SETTING

1. Press **MODE** and **LEVEL** keys simultaneously to enter calibration mode.
2. Press ⬆ (large up arrow) key to move to the next item.
3. Press ⬇ (large down arrow) key to move to the previous item.
4. Press ⬆⬇ (smaller arrow) keys to adjust the calibration settings.
5. Press the **SHORT** key to store the calibration settings.
6. Press the **LIMIT** key to exit the calibration mode.

1.1.1   CALIBRATION PROCEDURE FLOW CHART
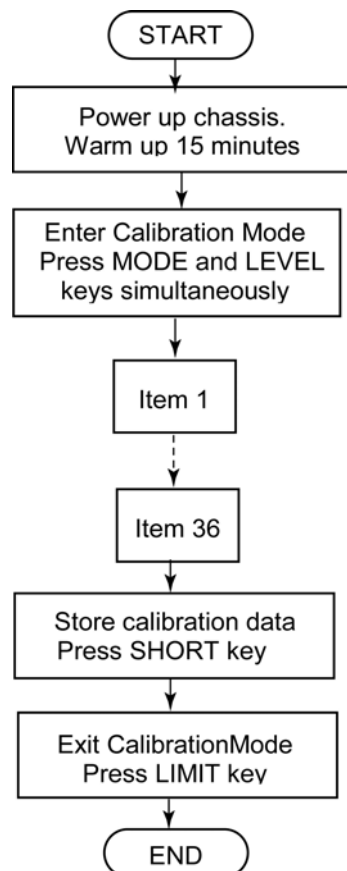
CALIBRATION

2.1　CALIBRATION SETUP

Prior to starting the calibration procedure, gather the necessary equipment (Section 2.1.1), then power up the chassis and allow it to warm up for 15 minutes.

2.1.1 EQUIPMENT REQUIRED

- DC Voltage Standard: Krohn-Hite EDC 521
- Current Shunt: Prodigit 7550
- Digital Multi-Meter (DMM): Agilent 34401A
- DC Power Supply: Sorensen SG Series (Supply depends upon models being calibrated.)

2.2　DVM CALIBRATION

Connect the SL Series electronic load as shown in Figure 2-1
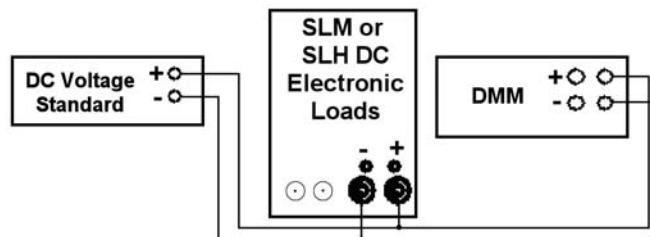
Figure 2-1. Connections for DVM Calibration Items 1-4)

Press **MODE** and **LEVEL** keys simultaneously to enter Calibration Mode and to be at Item 1 to start calibration.

2.2.1 DVM, RANGE I OFFSET AND GAIN, ITEMS 1 AND 2

7. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-1 for the load model being calibrated.

8. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.

MODEL	Input Voltage		MODEL	Input Voltage
SLM-60-30-150	0.200V		SLH-60-120-600	0.200V
SLM-60-60-300	0.200V		SLH-60-120-1200	0.200V
SLM-250-10-300	0.200V		SLH-60-120-1800	0.200V
SLM-500-10-300	0.400V		SLH-60-240-1200	0.200V
SLM-60-15-75	0.200V		SLH-60-240-1800	0.200V
			SLH-60-360-1800	0.200V
			SLH-500-60-1800	0.400V

Table 2-1. DVM, Range I Offset Adjustment Settings (Item 1)

9. Press the ⬆ key to go to Item 2.

10. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-2 for the load model being calibrated.

11. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.

12. Repeat steps 1 through 5 (press ⬇ to return to Item 1) until no further adjustments are necessary for the load DVM to match the DMM reading.

MODEL	Input Voltage		MODEL	Input Voltage
SLM-60-30-150	15.00V		SLH-60-120-600	15.00V
SLM-60-60-300	15.00V		SLH-60-120-1200	15.00V
SLM-250-10-300	30.00V		SLH-60-120-1800	15.00V
SLM-500-10-300	60.00V		SLH-60-240-1200	15.00V
SLM-60-15-75	15.00V		SLH-60-240-1800	15.00V
			SLH-60-360-1800	15.00V
			SLH-500-60-1800	60.00V

Table 2-2. DVM Range I Gain Adjustment Settings (Item 2)

2.2.2 DVM, RANGE II OFFSET AND GAIN, ITEMS 3 AND 4

1. Press the ⬆ key to go to Item 3.
2. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-3 for the model being calibrated.
3. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.

Item 3	Input Voltage
SLM-60-30-150	0.200V
SLM-60-60-300	0.200V
SLM-250-10-300	0.200V
SLM-500-10-300	0.400V
SLM-60-15-75	0.200V

Item 3	Input Voltage
SLH-60-120-600	0.200V
SLH-60-120-1200	0.200V
SLH-60-120-1800	0.200V
SLH-60-240-1200	0.200V
SLH-60-240-1800	0.200V
SLH-60-360-1800	0.200V
SLH-500-60-1800	0.400V

Table 2-3. DVM, Range II Gain Adjustment Settings (Item 3)

4. Press the ⬆ key to go to Item 4.
5. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-4 for the model being calibrated.
6. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.
7. Repeat steps 1 through 6 (press ⬇ to return to Item 3) until no further adjustments are necessary for the load DVM to match the DMM reading.

MODEL	Input Voltage
SLM-60-30-150	60.00V
SLM-60-60-300	60.00V
SLM-250-10-300	250.00V
SLM-500-10-300	500.00V
SLM-60-15-75	60.00V

MODEL	Input Voltage
SLH-60-120-600	60.00V
SLH-60-120-1200	60.00V
SLH-60-120-1800	60.00V
SLH-60-240-1200	60.00V
SLH-60-240-1800	60.00V
SLH-60-360-1800	60.00V
SLH-500-60-1800	500.00V

Table 2-4. DVM, Range II Gain Adjustment Settings (Item 4)

2.3   VSENSE CALIBRATION

Make the connections for VSENSE calibration as shown in Figure 2-2.
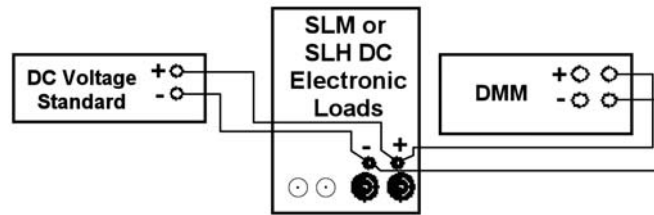
Figure 2-2. Connections for Vsense Calibration (Items 5-8).

2.3.1   VSENSE, RANGE I OFFSET AND GAIN, ITEMS 5 AND 6

1. Press the ⬆ key to go to Item 5.
2. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-5 for the model being calibrated.
3. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.

MODEL	Input Voltage
SLM-60-30-150	0.200V
SLM-60-60-300	0.200V
SLM-250-10-300	0.200V
SLM-500-10-300	0.400V
SLM-60-15-75	0.200V

MODEL	Input Voltage
SLH-60-120-600	0.200V
SLH-60-120-1200	0.200V
SLH-60-120-1800	0.200V
SLH-60-240-1200	0.200V
SLH-60-240-1800	0.200V
SLH-60-360-1800	0.200V
SLH-500-60-1800	0.400V

Table 2-5. VSense, Range I Offset Adjustment Settings (Item 5)

4. Press the ⬆ key to go to Item 6.

5. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-6 for the model being calibrated.

6. Use the ✦✦ keys to adjust the load DVM display until it matches the DMM reading.

7. Repeat steps 1 through 6 (press ✦ to return to Item 5) until no further adjustments are necessary for the load DVM to match the DMM reading.

MODEL	Input Voltage
SLM-60-30-150	15.00V
SLM-60-60-300	15.00V
SLM-250-10-300	30.00V
SLM-500-10-300	60.00V
SLM-60-15-75	15.00V

MODEL	Input Voltage
SLH-60-120-600	15.00V
SLH-60-120-1200	15.00V
SLH-60-120-1800	15.00V
SLH-60-240-1200	15.00V
SLH-60-240-1800	15.00V
SLH-60-360-1800	15.00V
SLH-500-60-1800	60.00V

Table 2-6. VSENSE, Range I Gain Adjustment Settings (Item 6)

2.3.2   VSENSE, RANGE II OFFSET AND GAIN, ITEMS 7 AND 8

1. Press the ✦ key to go to Item 7.

2. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-7 for the model being calibrated.

3. Use the ✦✦ keys to adjust the load DVM display until it matches the DMM reading.

MODEL	Input Voltage
SLM-60-30-150	0.200V
SLM-60-60-300	0.200V
SLM-250-10-300	0.200V
SLM-500-10-300	0.400V
SLM-60-15-75	0.200V

MODEL	Input Voltage
SLH-60-120-600	0.200V
SLH-60-120-1200	0.200V
SLH-60-120-1800	0.200V
SLH-60-240-1200	0.200V
SLH-60-240-1800	0.200V
SLH-60-360-1800	0.200V
SLH-500-60-1800	0.400V

Table 2-7. VSENSE, Range II Offset Adjustment Settings (Item 7)

4. Press the ✦ key to go to Item 8.

5. Set the DC Voltage Standard to the *Input Voltage* value shown in Table 2-8 for the model being calibrated.

6. Use the ⬆⬇ keys to adjust the load DVM display until it matches the DMM reading.

7. Repeat steps 1 through 6 (press ⬇ to return to Item 7) until no further adjustments are necessary for the DVM display to match the DMM reading.

MODEL	Input Voltage
SLM-60-30-150	60.00V
SLM-60-60-300	60.00V
SLM-250-10-300	250.00V
SLM-500-10-300	500.00V
SLM-60-15-75	60.00V

MODEL	Input Voltage
SLH-60-120-600	60.00V
SLH-60-120-1200	60.00V
SLH-60-120-1800	60.00V
SLH-60-240-1200	60.00V
SLH-60-240-1800	60.00V
SLH-60-360-1800	60.00V
SLH-500-60-1800	500.00V

Table 2-8. VSense, Range II Gain Adjustment Settings (Item 8)

2.4   DAM AND CC MODE CALIBRATIONS

The following three steps apply to both DAM and CC Mode Calibration, Items 9-20:

1. Connect the DC Power supply to input terminal, as shown in Figure 2-3.
2. Set the power supply voltage to +5Vdc.
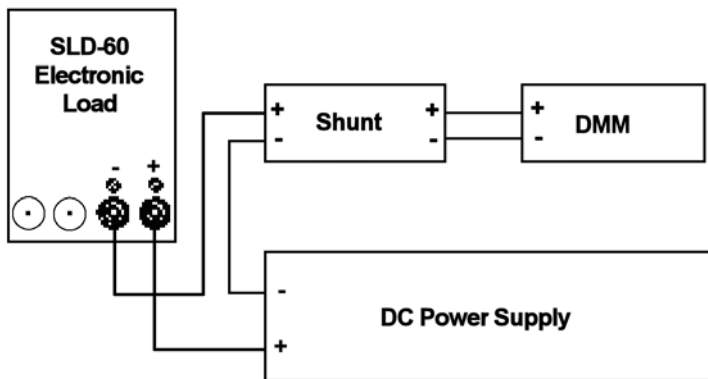
Figure 2-3. Connections for DAM and CC Mode Calibrations

2.4.1   DAM, RANGE I OFFSET AND GAIN, ITEMS 9 AND 10

1. Press the ⬆ key to go to Item 9.
2. **LOAD** OFF.
3. **PRES** ON.
4. Set the load current as shown in Table 2-9 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON.
7. Adjust using the ⬆⬇ keys until the load DAM reading matches the DMM reading.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	0.00A	SLH-60-120-600	0.00A
SLM-60-60-300	0.00A	SLH-60-120-1200	0.00A
SLM-250-10-300	0.00A	SLH-60-120-1800	0.00A
SLM-500-10-300	0.00A	SLH-60-240-1200	0.00A
SLM-60-15-75	0.00A	SLH-60-240-1800	0.00A
		SLH-60-360-1800	0.00A
		SLH-500-60-1800	0.00A

Table 2-9. DAM, Range I Offset Adjustment Settings (Item 9)

8. **LOAD** OFF.

9. Press the ⬆ key to go to Item 10.

10. **PRES** ON.

11. Set the load current as shown in Table 2-10 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the shunt current and the load DAM reading match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 9) until no further adjustments are necessary for the load DAM to match the DMM reading.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	3.000A	SLH-60-120-600	12.00A
SLM-60-60-300	6.000A	SLH-60-120-1200	12.00A
SLM-250-10-300	1.0050A	SLH-60-120-1800	12.00A
SLM-500-10-300	1.0050A	SLH-60-240-1200	24.00A
SLM-60-15-75	1.500A	SLH-60-240-1800	24.00A
		SLH-60-360-1800	36.00A
		SLH-500-60-1800	6.000A

Table 2-10. DAM, Range I Gain Adjustment Settings (Item 10)

2.4.2 DAM, RANGE II OFFSET AND GAIN, ITEMS 11 AND 12

1. **LOAD** OFF.

2. Press the ⬆ key to go to Item 11.

3. **PRES** ON.

4. Set the load current as shown in Table 2-11 for the model being calibrated.

5. **PRES** OFF.

6. **LOAD** ON.

7. Adjust using the ⬆⬇ keys until the load DAM matches the DMM reading.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	0.00A	SLH-60-120-600	0.00A
SLM-60-60-300	0.00A	SLH-60-120-1200	0.00A
SLM-250-10-300	0.00A	SLH-60-120-1800	0.00A
SLM-500-10-300	0.00A	SLH-60-240-1200	0.00A
SLM-60-15-75	0.00A	SLH-60-240-1800	0.00A
		SLH-60-360-1800	0.00A
		SLH-500-60-1800	0.00A

Table 2-11. DAM, Range II Offset Adjustment Settings (Item 11)

8. **Load** OFF.

9. Press the ⬆ key to go to Item 12.

10. **PRES** ON.

11. Set the load current as shown in Table 2-12 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the shunt current and the load DAM reading match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 11) until no further adjustments are necessary for the load DAM to match the DMM reading.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	30.00A	SLH-60-120-600	120.00A
SLM-60-60-300	60.00A	SLH-60-120-1200	120.00A
SLM-250-10-300	10.050A	SLH-60-120-1800	120.00A
SLM-500-10-300	10.050A	SLH-60-240-1200	240.00A
SLM-60-15-75	15.000A	SLH-60-240-1800	240.00A
		SLH-60-360-1800	360.00A
		SLH-500-60-1800	60.00A

Table 2-12. DAM, Range II Gain Adjustment Settings (Item 12)

2.4.3   CC MODE, LEVEL LOW, RANGE I OFFSET AND GAIN, ITEMS 13 AND 14

1. **LOAD** OFF (Power supply voltage should still be at +5Vdc).

2. Press the ⬆ key to go to Item 13.

3. **PRES** ON.

4. Set the load current as shown in Table 2-13 for the model being calibrated.

5. **PRES** OFF.

6. **LOAD** ON.

7. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	0.00A	SLH-60-120-600	0.00A
SLM-60-60-300	0.00A	SLH-60-120-1200	0.00A
SLM-250-10-300	0.00A	SLH-60-120-1800	0.00A
SLM-500-10-300	0.00A	SLH-60-240-1200	0.00A
SLM-60-15-75	0.00A	SLH-60-240-1800	0.00A
		SLH-60-360-1800	0.00A
		SLH-500-60-1800	0.00A

Table 2-13. CC Mode, Level Low, Range I Offset Adjustment Settings (Item 13)

8. **LOAD** OFF.

9. Press the ⬆ key to go to Item 14.

10. **PRES** ON.

11. Set the load current as shown in Table 2-16 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 13) until no further adjustments are necessary for the shunt current and the current setting to match.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	3.000A	SLH-60-120-600	12.00A
SLM-60-60-300	6.000A	SLH-60-120-1200	12.00A
SLM-250-10-300	1.0050A	SLH-60-120-1800	12.00A
SLM-500-10-300	1.0050A	SLH-60-240-1200	24.00A
SLM-60-15-75	1.500A	SLH-60-240-1800	24.00A
		SLH-60-360-1800	36.00A
		SLH-500-60-1800	6.000A

Table 2-14. CC Mode, Level Low, Range I Gain Adjustment Settings (Item 14)

2.4.4   CC MODE, LEVEL HIGH, RANGE I OFFSET AND GAIN, ITEMS 15 AND 16

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 15.
3. **PRES** ON.
4. Set the load current as shown in Table 2-15 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON.
7. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

MODEL	Current Setting		MODEL	Current Setting
SLM-60-30-150	0.00A		SLH-60-120-600	0.00A
SLM-60-60-300	0.00A		SLH-60-120-1200	0.00A
SLM-250-10-300	0.00A		SLH-60-120-1800	0.00A
SLM-500-10-300	0.00A		SLH-60-240-1200	0.00A
SLM-60-15-75	0.00A		SLH-60-240-1800	0.00A
			SLH-60-360-1800	0.00A
			SLH-500-60-1800	0.00A

Table 2-15. CC Mode, Level High, Range I Offset Adjustment Settings (Item 15)

8. **LOAD** OFF.
9. Press the ⬆ key to go to Item 16.
10. **PRES** ON.
11. Set the load current as shown in Table 2-16 for the model being calibrated.
12. **PRES** OFF.
13. **LOAD** ON.
14. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.
15. Repeat steps 1 through 14 (press ⬇ to return to Item 15) until no further adjustments are necessary for the shunt current and the current setting to match.

16. **PRES** ON.

17. Set the load current as shown in Table 2-16 for the model being calibrated.

18. **PRES** OFF.

19. **LOAD** ON.

20. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

21. Repeat steps 1 through 14 (press ⬇ to return to Item 15) until no further adjustments are necessary for the shunt current and the current setting to match.

MODEL	Current Setting
SLM-60-30-150	3.000A
SLM-60-60-300	6.000A
SLM-250-10-300	1.0050A
SLM-500-10-300	1.0050A
SLM-60-15-75	1.500A

MODEL	Current Setting
SLH-60-120-600	12.00A
SLH-60-120-1200	12.00A
SLH-60-120-1800	12.00A
SLH-60-240-1200	24.00A
SLH-60-240-1800	24.00A
SLH-60-360-1800	36.00A
SLH-500-60-1800	6.000A

Table 2-16. CC Mode, Level High, Range I Gain Adjustment Settings (Item 16)

2.4.5   CC MODE, LEVEL LOW, RANGE II OFFSET AND GAIN, ITEMS 17 AND 18

1. **LOAD** OFF.

2. Press the ⬆ key to go to Item 17.

3. **PRES** ON.

4. Set the load current as shown in Table 2-17 for the model being calibrated.

5. **PRES** OFF.

6. **LOAD** ON.

7. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

MODEL	Current Setting
SLM-60-30-150	0.00A
SLM-60-60-300	0.00A
SLM-250-10-300	0.00A
SLM-500-10-300	0.00A
SLM-60-15-75	0.00A

MODEL	Current Setting
SLH-60-120-600	0.00A
SLH-60-120-1200	0.00A
SLH-60-120-1800	0.00A
SLH-60-240-1200	0.00A
SLH-60-360-1800	0.00A
SLH-500-60-1800	0.00A

Table 2-17. CC Mode, Level Low, Range II Offset Adjustment Settings (Item 17)

8. **LOAD** OFF.

9. Press the ⬆ key to go to Item 18.

10. **PRES** ON.

11. Set the load current as shown in Table 2-18 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 17) until no further adjustments are necessary for the shunt and the current setting to match.

MODEL	Current Setting
SLM-60-30-150	30.00A
SLM-60-60-300	60.00A
SLM-250-10-300	10.050A
SLM-500-10-300	10.050A
SLM-60-15-75	15.000A

MODEL	Current Setting
SLH-60-120-600	120.00A
SLH-60-120-1200	120.00A
SLH-60-120-1800	120.00A
SLH-60-240-1200	240.00A
SLH-60-240-1800	240.00A
SLH-60-360-1800	360.00A
SLH-500-60-1800	60.00A

Table 2-18. CC Mode, Level Low, Range II Gain Adjustment Settings (Item 18)

2.4.6   CC MODE, LEVEL HIGH, RANGE II OFFSET AND GAIN, ITEMS 19 AND 20

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 19.
3. **PRES** ON.
4. Set the load current as shown in Table 2-19 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON.
7. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	0.00A	SLH-60-120-600	0.00A
SLM-60-60-300	0.00A	SLH-60-120-1200	0.00A
SLM-250-10-300	0.00A	SLH-60-120-1800	0.00A
SLM-500-10-300	0.00A	SLH-60-240-1200	0.00A
SLM-60-15-75	0.00A	SLH-60-240-1800	0.00A
		SLH-60-360-1800	0.00A
		SLH-500-60-1800	0.00A

Table 2-19. CC Mode, Level High, Range II Offset Adjustment Settings (Item 19)

8. **LOAD** OFF.
9. Press the ⬆ key to go to Item 20.

10. **PRES** ON.

11. Set the load current as shown in Table 2-20 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the shunt current and the current setting match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 19) until no further adjustments are necessary for the shunt current and the current setting to match.

MODEL	Current Setting	MODEL	Current Setting
SLM-60-30-150	30.00A	SLH-60-120-600	120.00A
SLM-60-60-300	60.00A	SLH-60-120-1200	120.00A
SLM-250-10-300	10.050A	SLH-60-120-1800	120.00A
SLM-500-10-300	10.050A	SLH-60-240-1200	240.00A
SLM-60-15-75	15.000A	SLH-60-240-1800	240.00A
		SLH-60-360-1800	360.00A
		SLH-500-60-1800	60.00A

Table 2-20. CC Mode, Level High, Range II Gain Adjustment Settings (Item 20)

2.5   CR MODE CALIBRATION

Connect the DC Power supply and DC Voltage Standard, as shown in Figure 2-4.
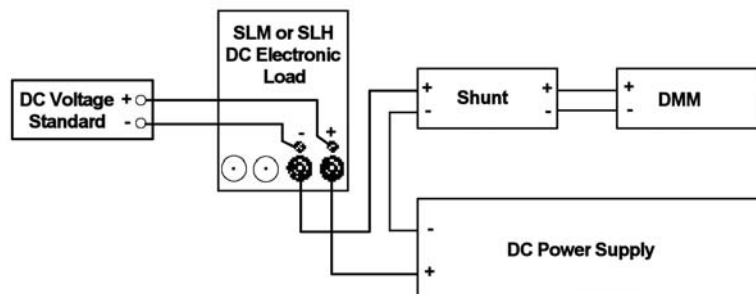
Figure 2-4. Connections for CR Mode Calibration

2.5.1   CR MODE, LEVEL LOW, RANGE I OFFSET AND GAIN, ITEMS 21 AND 22

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 21.
3. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-21 for the model being calibrated.
4. **PRES** ON
5. Set the current to the *Current Setting* value in Table 2-21 for the model being calibrated.
6. **PRES** OFF.
7. **LOAD** ON.
8. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	3750 Ω	60.00V	0.016A
SLM-60-60-300	3750 Ω	60.00V	0.016A
SLM-250-10-300	15625 Ω	250.00V	0.016A
SLM-500-10-300	6250 Ω	500.0V	0.08A
SLM-60-15-75	5000 Ω	60.00V	0.012A
SLH-60-120-600	1875 Ω	60.00V	0.0320A
SLH-60-120-1200	1875 Ω	60.00V	0.0320A
SLH-60-120-1800	1875 Ω	60.00V	0.0320A
SLH-60-240-1200	937.50 Ω	60.00V	0.0640A
SLH-60-240-1800	937.50 Ω	60.00V	0.0640A
SLH-60-360-1800	625 Ω	60.00V	0.0960A
SLH-500-60-1800	15625. Ω	500.00V	0.0320A

Table 2-21. CR Mode, Level Low, Range I Offset Adjustment Settings (Item 21)

9. **LOAD** OFF.
10. Press the ⬆ key to go to Item 22.

11. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-22 for the model being calibrated.

12. **PRES** ON.

13. Set the current to the *Current Setting* value in Table 2-22 for the model being calibrated.

14. **PRES** OFF.

15. **LOAD** ON.

16. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

17. Repeat steps 1 through 16 (press ⬇ to return to Item 21) until no further adjustments are necessary for the DAM reading t and the current setting to match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	2.000 Ω	60.00V	30.00A
SLM-60-60-300	1.000Ω	60.00V	60.00A
SLM-250-10-300	25.00Ω	250.00V	10.00A
SLM-500-10-300	50.00Ω	500.00V	10.000A
SLM-60-15-75	4.000Ω	60.00V	15.000A
SLH-60-120-600	0.5000 Ω	60.00V	120.00A
SLH-60-120-1200	0.5000 Ω	60.00V	120.00A
SLH-60-120-1800	0.5000 Ω	60.00V	120.00A
SLH-60-240-1200	0.2500 Ω	60.00V	240.00A
SLH-60-240-1800	0.2500 Ω	60.00V	240.00A
SLH-60-360-1800	0.167 Ω	60.00V	359.281A
SLH-500-60-1800	8.3333 Ω	500.00V	60.00A

Table 2-22. CR Mode, Level Low, Range I Gain Adjustment Settings (Item 22)

2.5.2   CR MODE, LEVEL HIGH, RANGE I OFFSET AND GAIN ITEMS 23 AND 24

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 23.
3. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-23 for the model being calibrated.
4. **PRES** ON.
5. Set the current to the *Current Setting* value in Table 2-23 for the model being calibrated.
6. **PRES** OFF.
7. **LOAD** ON.
8. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	3750 Ω	60.00V	0.016A
SLM-60-60-300	3750 Ω	60.00V	0.016A
SLM-250-10-300	15625 Ω	250.00V	0.08A
SLM-500-10-300	6250 Ω	500.0V	0.04A
SLM-60-15-75	5000 Ω	60.00V	0.012A
SLH-60-120-600	1875 Ω	60.00V	0.0320A
SLH-60-120-1200	1875 Ω	60.00V	0.0320A
SLH-60-120-1800	1875 Ω	60.00V	0.0320A
SLH-60-240-1200	937.50 Ω	60.00V	0.0640A
SLH-60-240-1800	937.50 Ω	60.00V	0.0640A
SLH-60-360-1800	625 Ω	60.00V	0.0960A
SLH-500-60-1800	15625. Ω	500.00V	0.032A

Table 2-23. CR Mode, Level High, Range I Offset Adjustment Settings (Item 23)

9. **LOAD** OFF.
10. Press the ⬆ key to go to Item 24.

11. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-24 for the model being calibrated.

12. **PRES** ON.

13. Set the current to the *Current Setting* value in Table 2-24 for the model being calibrated.

14. **PRES** OFF.

15. **LOAD** ON.

16. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

17. Repeat steps 1 through 16 (press ⬇ to return to Item 23) until no further adjustments are necessary for the DAM reading t and the current setting to match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	2.000 Ω	60.00V	30.00A
SLM-60-60-300	1.000Ω	60.00V	60.00A
SLM-250-10-300	25.00Ω	250.00V	10.00A
SLM-500-10-300	50.00Ω	500.00V	10.000A
SLM-60-15-75	4.000Ω	60.00V	15.000A
SLH-60-120-600	0.5000 Ω	60.00V	120.00A
SLH-60-120-1200	0.5000 Ω	60.00V	120.00A
SLH-60-120-1800	0.5000 Ω	60.00V	120.00A
SLH-60-240-1200	0.2500 Ω	60.00V	240.00A
SLH-60-240-1800	0.2500 Ω	60.00V	240.00A
SLH-60-360-1800	0.167 Ω	60.00V	359.281A
SLH-500-60-1800	8.333 Ω	500.00V	60.00A

Table 2-24. CR Mode, Level High, Range I Gain Adjustment Settings (Item 24)

2.5.3   CR MODE, LEVEL LOW, RANGE II OFFSET AND GAIN, ITEMS 25 AND 26

1. **LOAD** OFF.

2. Press the ⬆ key to go to Item 25.

3. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-25 for the model being calibrated.

4. **PRES** ON.

5. Set the current to the *Current Setting* value in Table 2-25 for the model being calibrated.

6. **PRES** OFF.

7. **LOAD** ON.

8. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	0.1068Ω	3.204V	30.00A
SLM-60-60-300	0.0534Ω	3.204V	60.00A
SLM-250-10-300	1.3334Ω	13.334V	10.00A
SLM-500-10-300	2.680Ω	26.80V	10.000A
SLM-60-15-75	0.2134Ω	3.201V	15.00A
SLH-60-120-600	0.0268 Ω	3.216V	120.00A
SLH-60-120-1200	0.0268 Ω	3.216V	120.00A
SLH-60-120-1800	0.0268 Ω	3.216V	120.00A
SLH-60-240-1200	0.0133 Ω	3.216V	240.00A
SLH-60-240-1800	0.0134 Ω	3.216V	240.00A
SLH-60-360-1800	0.0088 Ω	3.168V	360.00A
SLH-500-60-1800	0.4444Ω	26.666V	60.00A

Table 2-25. CR Mode, Level Low, Range II Offset Adjustment Settings (Item 25)

9. **LOAD** OFF.

10. Press the ⬆ key to go to Item 26.

11. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-26 for the model being calibrated.

12. **PRES** ON.

13. Set the current to the *Current Setting* value in Table 2-26 for the model being calibrated.

14. **PRES** OFF.

15. **LOAD** ON.

16. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

17. Repeat steps 1 through 16 (press ⬇ to return to Item 25) until no further adjustments are necessary for the DAM reading and the current setting to match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	2.003Ω	60.00V	30.00A
SLM-60-60-300	1.001Ω	60.00V	60.00A
SLM-250-10-300	25.00Ω	250.00V	10.000A
SLM-500-10-300	50.00Ω	500.00V	10.000A
SLM-60-15-75	4.000Ω	60.00V	15.000A
SLH-60-120-600	0.5000 Ω	60.00V	120.00A
SLH-60-120-1200	0.5000 Ω	60.00V	120.00A
SLH-60-120-1800	0.5000 Ω	60.00V	120.00A
SLH-60-240-1200	0.2500 Ω	60.00V	240.00A
SLH-60-240-1800	0.2500 Ω	60.00V	240.00A
SLH-60-360-1800	0.167 Ω	60.00V	359.281A
SLH-500-60-1800	8.3333Ω	500.00V	60.00A

Table 2-26. CR Mode, Level Low, Range II Gain Adjustment Settings (Item 26)

2.5.4 CR MODE, LEVEL HIGH, RANGE II OFFSET AND GAIN, ITEMS 27 AND 28

1. LOAD OFF.
2. Press the ⬆ key to go to Item 27.
3. Set the power supply voltage and the DC Voltage Standard to the *VSENSE Input* value shown in Table 2-27 for the model being calibrated.
4. **PRES** ON.
5. Set the current to the *Current Setting* value in Table 2-27 for the model being calibrated.
6. **PRES** OFF.
7. **LOAD** ON.
8. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

MODEL	Resistance Setting	VSENSE Input	Current Setting
SLM-60-30-150	0.1068Ω	3.204V	30.000A
SLM-60-60-300	0.0534Ω	3.204V	60.000A
SLM-250-10-300	1.3334Ω	13.334V	10.000A
SLM-500-10-300	2.680Ω	26.80V	5.000A
SLM-60-15-75	0.2134Ω	3.201V	15.000A
SLH-60-120-600	0.0268 Ω	3.216V	120.00A
SLH-60-120-1200	0.0268 Ω	3.216V	120.00A
SLH-60-120-1800	0.0268 Ω	3.216V	120.00A
SLH-60-240-1200	0.0133 Ω	3.216V	240.00A
SLH-60-240-1800	0.0134 Ω	3.216V	240.00A
SLH-60-360-1800	0.0088 Ω	3.168V	360.00A
SLH-500-60-1800	0.4444Ω	26.666V	60.00A

Table 2-27. CR Mode, Level High, Range II Offset Adjustment Settings (Item 27)

9. **LOAD** OFF.
10. Press the ⬆ key to go to Item 28.

11. Set the power supply voltage and the DC Voltage Standard to the VSENSE Input value shown in Table 2-28 for the model being calibrated.

12. **PRES** ON.

13. Set the current to the *Current Setting* value in Table 2-28 for the model being calibrated.

14. **PRES** OFF.

15. **LOAD** ON.

16. Adjust using the ⬆⬇ keys until the DAM reading and the current setting match.

17. Repeat steps 1 through 16 (press ⬇ to return to Item 27) until no further adjustments are necessary for the DAM reading and the current setting to match.

MODEL	Resistance Setting	VSENSE	Current Setting
SLM-60-30-150	2.000Ω	60.00V	30.000A
SLM-60-60-300	1.0001Ω	60.00V	60.000A
SLM-250-10-300	25.00Ω	250.00V	10.000A
SLM-500-10-300	50.000Ω	500.00V	10.000A
SLM-60-15-75	4.000Ω	60.00V	15.000A
SLH-60-120-600	0.5000 Ω	60.00V	120.00A
SLH-60-120-1200	0.5000 Ω	60.00V	120.00A
SLH-60-120-1800	0.5000 Ω	60.00V	120.00A
SLH-60-240-1200	0.2500 Ω	60.00V	240.00A
SLH-60-240-1800	0.2500 Ω	60.00V	240.00A
SLH-60-360-1800	0.167 Ω	60.00V	359.281A
SLH-500-60-1800	8.3333 Ω	500.00V	60.00A

Table 2-28. CR Mode, Level High, Range II Gain Adjustment Settings (Item 28)

2.6   CV MODE CALIBRATION

Connect the DC Power Supply to the input terminal as illustrated in Figure 1-1.
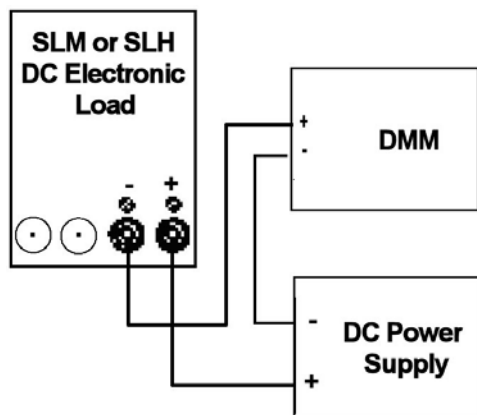
Figure 2-5. CV Mode Calibration Connections

2.6.1   CV MODE, LEVEL LOW, OFFSET AND GAIN, ITEMS 29 AND 30

For CV Mode Calibration, set the DC power supply **current limit** to **0.1A**.

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 29.
3. **PRES** ON.
4. Set the power supply voltage to the V Input value shown in Table 2-29 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON.
7. Adjust using the ⬆⬇ keys until the DVM reading and the Voltage Setting match.

MODEL	V Input	Voltage Setting	MODEL	V Input	Voltage Setting
SLM-60-30-150	61.5V	0.800V	SLH-60-120-600	61.5V	0.800V
SLM-60-60-300	61.5V	0.800V	SLH-60-120-1200	61.5V	0.800V
SLM-250-10-300	61.5V	8.000V	SLH-60-120-1800	61.5V	0.800V
SLM-500-10-300	61.5V	16.008V	SLH-60-240-1200	61.5V	0.800V
SLM-60-15-75	61.5V	0.800V	SLH-60-240-1800	61.5V	0.800V
			SLH-60-360-1800	61.5V	0.800V
			SLH-500-60-1800	61.5V	16.008V

Table 2-29. CV Mode, Level Low, Offset Adjustment Settings (Item 29)

8. **LOAD** OFF.
9. Press the ⬆ key to go to Item 30.

10. **PRES** ON.

11. Set voltage to the V Input value shown in Table 2-30 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ↑↓ keys until the DVM reading and the Voltage Setting match.

15. Repeat steps 1 through 14 (press ↓ to return to Item 29) until no further adjustments are necessary for the DVM reading and the Voltage Setting to match.

MODEL	V Input	Voltage Setting	MODEL	V Input	Voltage Setting
SLM-60-30-150	61.5V	60.000V	SLH-60-120-600	61.5V	60.000V
SLM-60-60-300	61.5V	60.000V	SLH-60-120-1200	61.5V	60.000V
SLM-250-10-300	252V	250.0V	SLH-60-120-1800	61.5V	60.000V
SLM-500-10-300	505V	500.2V	SLH-60-240-1200	61.5V	60.000V
SLM-60-15-75	61.5V	60.000V	SLH-60-240-1800	61.5V	60.000V
			SLH-60-360-1800	61.5V	60.000V
			SLH-500-60-1800	505	500.2V

Table 2-30. CV Mode, Level Low, Gain Adjustment Settings (Item 30)

2.6.2   CV MODE, LEVEL HIGH, OFFSET AND GAIN, ITEMS 31 AND 32

Set the DC power supply **current limit to 0.1A**.

1. **LOAD** OFF.
2. Press the ⬆ key to go to Item 31.
3. **PRES** ON.
4. Set voltage to the V Input value shown in Table 2-31 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON.
7. Adjust using the ⬆⬇ keys until the DVM reading and the Voltage Setting match.

MODEL	V Input	Voltage Setting	MODEL	V Input	Voltage Setting
SLM-60-30-150	61.5	0.800V	SLH-60-120-600	61.5	0.800V
SLM-60-60-300	61.5	0.800V	SLH-60-120-1200	61.5	0.800V
SLM-250-10-300	61.5	8.000V	SLH-60-120-1800	61.5	0.800V
SLM-500-10-300	61.5	16.008V	SLH-60-240-1200	61.5	0.800V
SLM-60-15-75	61.5	0.800V	SLH-60-240-1800	61.5	0.800V
			SLH-60-360-1800	61.5	0.800V
			SLH-500-60-1800	61.5	16.008V

Table 2-31. CV Mode, Level High, Offset Adjustment Settings (Item 31)

8. **LOAD** OFF.
9. Press the ⬆ key to go to Item 32.

10. **PRES** ON.

11. Set voltage to the V Input value shown in Table 2-32 for the model being calibrated.

12. **PRES** OFF.

13. **LOAD** ON.

14. Adjust using the ⬆⬇ keys until the DVM reading and the Voltage Setting match.

15. Repeat steps 1 through 14 (press ⬇ to return to Item 30) until no further adjustments are necessary for the DVM reading and the Voltage Setting to match.

MODEL	V Input	Voltage Setting	MODEL	V Input	Voltage Setting
SLM-60-30-150	61.5	60.000V	SLH-60-120-600	61.5	60.000V
SLM-60-60-300	61.5	60.000V	SLH-60-120-1200	61.5	60.000V
SLM-250-10-300	252	250.0V	SLH-60-120-1800	61.5	60.000V
SLM-500-10-300	505	500.2V	SLH-60-240-1200	61.5	60.000V
SLM-60-15-75	61.5	60.000V	SLH-60-240-1800	61.5	60.000V
			SLH-60-360-1800	61.5	60.000V
			SLH-500-60-1800	505	500.2V

Table 2-32. CV Mode, Level High, Gain Adjustment Settings (Item 32)

2.7   CP MODE CALIBRATION
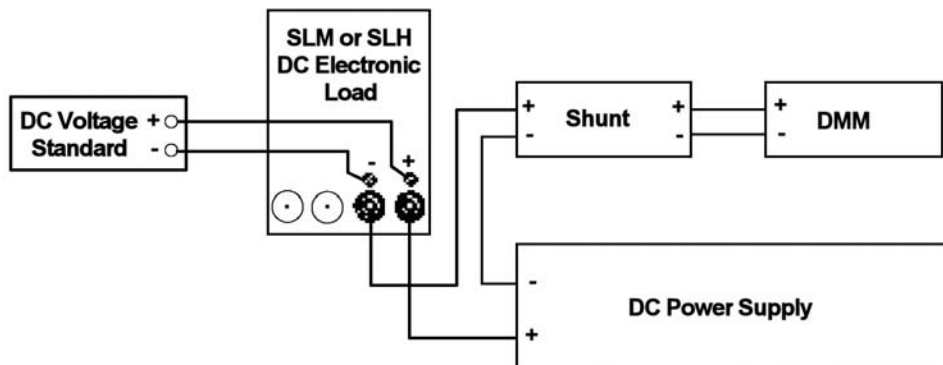
Make the connections shown in Figure 2-6.

Figure 2-6. Connections for CP Mode Calibration

2.7.1   CP MODE, LEVEL LOW, OFFSET AND GAIN, ITEMS 33 AND 34

1. **LOAD** OFF.
2. **Press** the ⬆ key to go to Item 33.
3. Input Voltage to the VSENSE terminal as Table 2-33 for the model being calibrated.
4. **PRES** ON, setting Power as table 38 for the model being calibrated.
5. **PRES** OFF.
6. **LOAD** ON, Adjust using the ⬆⬇ Keys until the load DAM matches Current Setting value.

MODEL	Setting Power	VSENSE Input	Current Setting
SLM-60-30-150	15.0W	5.00V	3.000A
SLM-60-60-300	30.0W	5.00V	6.000A
SLM-250-10-300	6.00W	30.00V	0.2A
SLM-500-10-300	30.00W	40.00V	0.1375A
SLM-60-15-75	7.50W	5.00V	1.500A
SLH-60-120-600	60.00W	5.000V	12.00A
SLH-60-120-1200	120.0W	10.000V	12.00A
SLH-60-120-1800	180.0W	15.00V	12.00A
SLH-60-240-1200	120.0W	5.00V	24.00A
SLH-60-240-1800	180.0W	7.500V	24.00A
SLH-60-360-1800	180.00W	5.00V	36.00A
SLH-500-60-1800	180.00W	300.00V	0.600A

Table 2-33. CP Mode, Level Low, Offset Adjustment Settings (Item 33)

7. **LOAD** OFF.
8. Press the ⬆ key to go to Item 34.

9. Input Voltage to the VSENSE terminal per Table 2-34 for the model being calibrated.

10. **PRES** ON, setting Power as table 36 for the model being calibrated.

11. **PRES** OFF.

12. **LOAD** ON, Adjust using the ⬆⬇ keys until the load DAM matches Current Setting value.

13. **LOAD** OFF.

14. Repeat steps 1 through 13 (press ⬇ to return to Item 21) until no further adjustments are necessary for the load DAM to match the DMM reading.

MODEL	Power Setting	VSENSE input	Current Setting
SLM-60-30-150	150.0W	50.00V	3.000A
SLM-60-60-300	300.0W	50.00V	6.000A
SLM-250-10-300	300.0W	200V	1.500A
SLM-500-10-300	300.0W	300V	1.000A
SLM-60-15-75	75.0W	50.00V	1.5000A
SLH-60-120-600	600.0W	50.00V	12.00A
SLH-60-120-1200	1200.0W	50.00V	24.00A
SLH-60-120-1800	1800.0W	50.00V	36.00A
SLH-60-240-1200	1200.0W	50.00V	24.00A
SLH-60-240-1800	1800.0W	50.00V	36.00A
SLH-60-360-1800	1800.0W	50.00V	36.00A
SLH-500-60-1800	1800.0W	300.00V	6.000A

Table 2-34. CP Mode, Level Low, Gain Adjustment Settings (Item 34)

2.7.2   CP MODE, LEVEL HIGH, OFFSET AND GAIN, ITEMS 35 AND 36

1. **LOAD** OFF

2. Press the ⬆ key to go to Item 35.

3. Input Voltage to the VSENSE terminal as Table 2-35.

4. **PRES** ON, setting Power per Table 2-35 for the model being calibrated.

5. **PRES** OFF.

6. **LOAD** ON, Adjust using the ⬆⬇ keys until load DAM matches Current Setting value.

MODEL	Power Setting	VSENSE Input	Current Setting
SLM-60-30-150	15.00W	50.00V	0.300A
SLM-60-60-300	30.00W	50.00V	0.600A
SLM-250-10-300	6.000W	30.00V	0.200A
SLM-500-10-300	30.00W	300.0V	0.100A
SLM-60-15-75	7.500W	50.00V	0.150A
SLH-60-120-600	60.00W	50.00V	1.2000A
SLH-60-120-1200	120.0W	50.00V	2.400A
SLH-60-120-1800	180.0W	50.00V	3.600A
SLH-60-240-1200	120.0W	50.00V	2.4000A
SLH-60-240-1800	180.0W	50.00V	3.6000A
SLH-60-360-1800	180.00W	50.00V	3.6000A
SLH-500-60-1800	180.00W	300.0V	0.6000A

Table 2-35. CP Mode, Level High, Offset Adjustment Settings (Item 35)

7. **LOAD** OFF.

8. Press the ⬆ key to go to Item 36.

9. Input Voltage to the VSENSE terminal as Table 2-36.

10. **PRES** ON, setting Power as table 40, PRES OFF.

11. **LOAD** ON, Adjust using the ⬆⬇ keys until load DAM matches Current Setting value.

12. Repeat steps 1 through 11 (press ⬇ to return to Item 21) until no further adjustments are necessary for the load DAM to match the DMM reading.

13. **LOAD** OFF.

MODEL	Power Setting	VSENSE Input	Current Setting
SLM-60-30-150	150W	5.00V	30.000A
SLM-60-60-300	300W	5.00V	60.000A
SLM-250-10-300	300W	30.00V	10.000A
SLM-500-10-300	300W	30.00V	10.000A
SLM-60-15-75	75W	5.00V	15.000A
SLH-60-120-600	600.0W	5.000V	120.0A
SLH-60-120-1200	1200.0W	10.000V	120.0A
SLH-60-120-1800	1800.0W	15.000V	120.0A
SLH-60-240-1200	1200.0W	5.000V	240.0A
SLH-60-240-1800	1800.0W	7.500V	240.0A
SLH-60-360-1800	1800.0W	5.000V	360.0A
SLH-500-60-1800	1800.0W	30.00V	60.00A

Table 2-36. CP Mode, Level High, Gain Adjustment Settings (Item 36)

2.8   STORE CALIBRATION DATA

Press **SHORT** key to store the calibration data.

Press **LIMIT** key to exit the calibration mode.

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SECTION 3
CALIBRATION DATA RECORD

Single Input DC Electronic Loads Calibration Report

MODEL : _____   SERIAL NO : _____

DATE : _____   Inspector : _____

Item	Description	Calibration Data	Item	Description	Calibration Data
1	DVM I Offset		21	CR I Low Offset	
2	DVM I Gain		22	CR I Low Gain	
3	DVM II Offset		23	CR I Hi Offset	
4	DVM II Gain		24	CR I Hi Gain	
5	VSEN I Offset		25	CR II Low Offset	
6	VSEN I Gain		26	CR II Low Gain	
7	VSEN II Offset		27	CR II Hi Offset	
8	VSEN II Gain		28	CR II Hi Gain	
9	DAM I Offset		29	CV I Low Offset	
10	DAM I Gain		30	CV I Low Gain	
11	DAM II Offset		31	CV I Hi Offset	
12	DAM II Gain		32	CV I Hi Gain	
13	CC I Low Offset		33	CP II Low Offset	
14	CC I Low Gain		34	CP II Low Gain	
15	CC I Hi Offset		35	CP II Hi Offset	
16	CC I Hi Gain		36	CP II Hi Gain	
17	CC II Low Offset		37	Load on V Offset	
18	CC II Low Gain				
19	CC II Hi offset				
20	CC II Hi GAIN				