



Made in the
United States of America

Limit Comparator Operation Instructions



Figure 1. VER-29205 Limit Comparator

Description

Frequency of recalibration should be based on the critical nature of those ESD sensitive items handled and the risk of failure for the ESD protective equipment and materials. In general, Vermason recommends that calibration be performed annually.

Use the Vermason VER-29205 Limit Comparator to perform periodic testing (once every 6-12 months) of the EMIT SmartLog V4™, SmartLog V5™ and Dual Independent Testers. It may also be used to verify the calibration of the Vermason Combo Tester X3. The Limit Comparator can be used on the shop floor within a few minutes virtually eliminating downtime, verifying that the tester is operating within tolerances.

Packaging

- 1 Limit Comparator
- 2 Test Leads with Banana Plug Terminals
- 1 RJ11 Foot Plate Cable
- 1 Certificate of Calibration

Tester Configuration

The resistance limits for footwear and wrist strap tests are controlled by the DIP switches located on the sides of the tester. Use the following tables for the DIP switch settings and their corresponding test values.

EMIT SMARTLOG V4™, DUAL INDEPENDENT TESTER

FOOTWEAR RESISTANCE

DIP switches 1 and 2 control the HIGH test limit. DIP switches 3 and 4 control the LOW test limit. NOTE: At 1 Gigohm high limit resistance, a dirty foot plate could result in a false pass. Be sure to keep the foot plate clean particularly when using this setting. This setting is not suitable for relative humidity greater than 50%.

WRIST STRAP RESISTANCE

DIP switches 5 and 6 control the HIGH test limit. DIP switch 5 must be ON (default setting) for the wrist strap test to be active. The wrist strap test will be disabled if DIP switch 5 is set to OFF.

The LOW limit for the wrist strap test is set to 1 Megohm and cannot be modified by the user.

EMIT SMARTLOG V5™ VERMASON COMBO TESTER X3

FOOTWEAR RESISTANCE

DIP switches 1 and 2 control the HIGH test limit. DIP switches 3 and 4 control the LOW test limit. NOTE: At 1 Gigohm high limit resistance, a dirty foot plate could result in a false pass. Be sure to keep the foot plate clean particularly when using this setting. This setting is not suitable for relative humidity greater than 50%.

WRIST STRAP RESISTANCE

DIP switches 5 and 6 control the HIGH test limit. DIP switch 5 must be ON (default setting) for the wrist strap test to be active. The wrist strap test will be disabled if DIP switch 5 is set to OFF.

The LOW limit for the wrist strap test is set to 750 Kilohms and cannot be modified by the user.

Operation

EMIT SMARTLOG V4™ AND DUAL INDEPENDENT TESTER

Testing the Wrist Strap Circuit

1. Plug the two included test leads into each yellow banana jack located at the top of the Limit Comparator.
2. Connect one of the test leads from the Limit Comparator to the "SINGLE-WIRE" jack located on the face of the tester. Connect the other lead from the Limit Comparator to the ground jack located on the bottom of the tester.

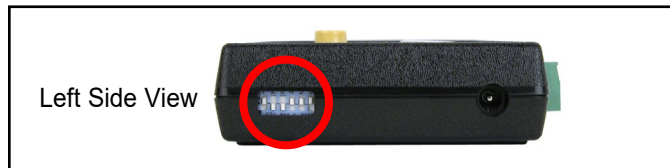


Figure 2. Locating the DIP switch on the SmartLog V4™ Tester, Dual Independent Tester and Combo Tester X3

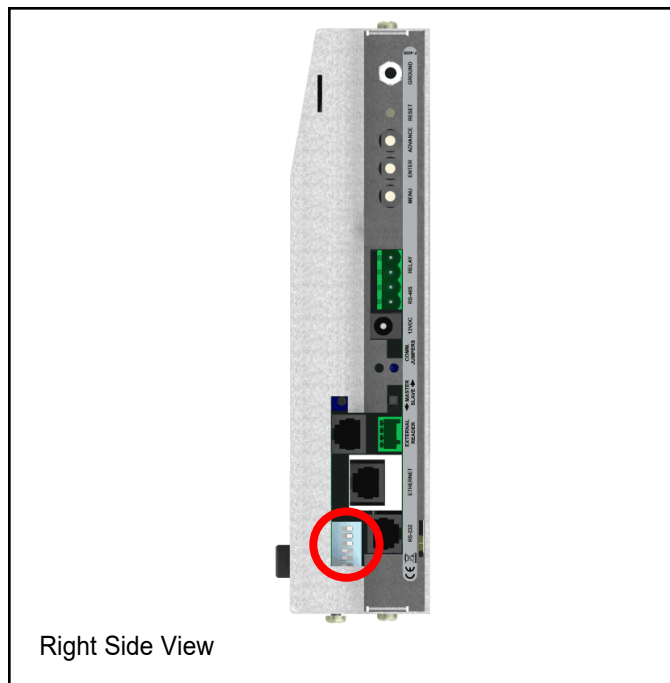


Figure 3. Locating the DIP switch on the SmartLog V5™

3. Select "1M LOW" with the Limit Comparator's rotary switch.
4. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a wrist strap FAIL LOW condition.

Switch 1	Switch 2	HIGH Limit Resistance
ON	ON	10 Megohms (1×10^7)
OFF	OFF	35 Megohms (3.5×10^7)
ON	OFF	100 Megohms (1×10^8)
OFF	ON	1 Gigohm (1×10^9)

Switch 3	Switch 4	LOW Limit Resistance
ON	OFF	100 Kilohms (1×10^5)
OFF	ON	1 Megohm (1×10^6)

default setting

5. Select "1M PASS" on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
6. Select either the "10M PASS" or "35M PASS" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.

Switch 5	Switch 6	HIGH Limit Resistance
OFF	OFF	wrist strap test disabled
ON	ON	10 Megohms (1×10^7)
ON	OFF	35 Megohms (3.5×10^7)

default USA setting

default Europe & Asia setting

7. Select either the "10M HIGH" or "35M HIGH" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

Testing the Footwear Circuit

1. Insert the Limit Comparator's stereo plug into the jack labeled "FOOT PLATE" on the bottom of the tester.
2. Select the appropriate FAIL LOW setting on the Limit Comparator.
3. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a FAIL LOW condition for both feet.

Switch 1	Switch 2	HIGH Limit Resistance
ON	ON	10 Megohms (1×10^7)
OFF	OFF	35 Megohms (3.5×10^7)
ON	OFF	100 Megohms (1×10^8)
OFF	ON	1 Gigohm (1×10^9)

Switch 3	Switch 4	LOW Limit Resistance
ON	OFF	100 Kilohms (1×10^5)
OFF	ON	750 Kilohms (7.5×10^5)

default setting

4. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
5. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.

6. Select the appropriate FAIL HIGH setting on the Limit

Switch 5	Switch 6	HIGH Limit Resistance
OFF	OFF	wrist strap test disabled
ON	ON	10 Megohms (1×10^7)
ON	OFF	35 Megohms (3.5×10^7)

default setting

Comparator and repeat the test. The tester should indicate a FAIL HIGH condition for both feet.

EMIT SMARTLOG V5™

Testing the Wrist Strap Circuit

1. Plug the two included test leads into each yellow banana jack located at the top of the Limit Comparator.
2. Connect one of the test leads from the Limit Comparator to the "SINGLE WIRE" jack located on the face of the tester. Connect the other lead from the Limit Comparator to the ground jack located on the right-hand side of the SmartLog V5.
3. Select "750K LOW" with the Limit Comparator's rotary switch.
4. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a wrist strap FAIL LOW condition.
5. Select "750K PASS" on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
6. Select either the "10M PASS" or "35M PASS" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
7. Select either the "10M HIGH" or "35M HIGH" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

Testing the Footwear Circuit

1. Plug the included foot plate cable into the RJ11 jack located at the top of the Limit Comparator.
2. Insert the opposite end of the foot plate cable into the foot plate jack located on the right-hand side of the SmartLog V5.
3. Select the appropriate FAIL LOW setting on the Limit Comparator.
4. Toggle the Limit Comparator's switch to LEFT FOOT. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a FAIL LOW condition for the left foot. Toggle the switch to RIGHT FOOT and retest. The tester should indicate a FAIL LOW condition for the right foot.

5. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a PASS condition for both feet.

6. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a PASS condition for both feet.

7. Select the appropriate FAIL HIGH setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a FAIL HIGH condition for both feet.

EMIT SMARTLOG V5™

Testing the Wrist Strap Circuit

1. Plug the two included test leads into each yellow banana jack located at the top of the Limit Comparator.
2. Connect one of the test leads from the Limit Comparator to the "SINGLE WIRE" jack located on the face of the tester. Connect the other lead from the Limit Comparator to the ground jack located on the right-hand side of the SmartLog V5.
3. Select "1M LOW" with the Limit Comparator's rotary switch.
4. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a wrist strap FAIL LOW condition.
5. Select "1M PASS" on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
6. Select either the "10M PASS" or "35M PASS" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
7. Select either the "10M HIGH" or "35M HIGH" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

Testing the Footwear Circuit

1. Plug the included foot plate cable into the RJ11 jack located at the top of the Limit Comparator.
2. Insert the opposite end of the foot plate cable into the foot plate jack located on the right-hand side of the SmartLog V5.
3. Select the appropriate FAIL LOW setting on the Limit Comparator.
4. Toggle the Limit Comparator's switch to LEFT FOOT. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a FAIL LOW condition for the left foot. Toggle the switch to RIGHT FOOT and retest. The tester should indicate a FAIL LOW condition for the right foot.

5. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a PASS condition for both feet.
6. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a PASS condition for both feet.
7. Select the appropriate FAIL HIGH setting on the Limit Comparator and repeat the test for the LEFT FOOT and RIGHT FOOT. The tester should indicate a FAIL HIGH condition for both feet.

VERMASON COMBO TESTER X3

Testing the Wrist Strap Circuit

1. Plug the two included test leads into each yellow banana jack located at the top of the Limit Comparator.
2. Connect one of the test leads from the Limit Comparator to the "SINGLE-WIRE" jack located on the face of the tester. Connect the other lead from the Limit Comparator to the ground jack located on the bottom of the tester.
3. Select "750K LOW" with the Limit Comparator's rotary switch.
4. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a wrist strap FAIL LOW condition.
5. Select "750K PASS" on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
6. Select either the "10M PASS" or "35M PASS" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
7. Select either the "10M HIGH" or "35M HIGH" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

Testing the Footwear Circuit

1. Insert the Limit Comparator's stereo plug into the jack labeled "FOOT PLATE" on the bottom of the tester.
2. Select the appropriate FAIL LOW setting on the Limit Comparator.
3. Touch and hold the test plate of the tester until the test is completed. The tester should indicate a FAIL LOW condition for both feet.
4. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
5. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
6. Select the appropriate FAIL HIGH setting on the Limit

Comparator and repeat the test. The tester should indicate a FAIL HIGH condition for both feet.

Specifications

Dimensions:

3.8" L x 2.4" W x .9" H
(10 cm x 6 cm x 2 cm)

Weight:

.2 lbs
(.1 kg)

Resistance Values:

Setting	Nominal Resistance	% Tolerance of Nominal Resistance
100K LOW	90K	±2%
100K PASS	110K	±2%
750K LOW	675K	±2%
750K PASS	825K	±2%
1M LOW	909K	±2%
1M PASS	1.10M	±2%
10M PASS	9.09M	±5%
10M HIGH	11.09M	±5%
35M PASS	31.09M	±5%
35M HIGH	37.89M	±5%
100M PASS	90.9M	±5%
100M HIGH	112.9M	±5%
1G PASS	812.9M	±10%
1G HIGH	1.213G	±10%

These resistance values may be verified using a digital voltmeter by setting it to read Ohms (Ω). Connect your voltmeter's test leads into each of the Limit Comparator's yellow banana jacks. If any value is out of specification, the Limit Comparator must be returned to the manufacturer for repair.

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See Vermason's Warranty -
<http://www.vermason.co.uk/Warranty.aspx>