

Get the performance of a state of the art Tester for a cost-effective price



The 780 / 781 Economy Combo Tester will individually and simultaneously test each wrist strap and heel grounder for proper connection and resistivity value in less than 3 seconds.

With speed, ease and clarity, colored LED show test results. No computer is necessary for pass / fail testing so you don't pay for features you don't need!

This economical tester can be also be purchased with a heavy duty stand.

Other Benefits:

- Tests wrist strap and heel grounders individually and simultaneously
- No switch flipping or foot changing
- Automatic calibration
- Measures from 100 kilohms to 100 megohms, with an option to 1000 megohms
- Adjustable resistivity limits
- NIST certificate included
- AC or DC powered
- LED, low battery and buzzer displays
- Can be used on a stand or mount on the wall

ACL 780 / 781 Economy Combo Tester

ACL 780 includes Tester and Heavy Duty Footplate (as shown below)
ACL 781 includes Tester, Heavy Duty Footplate and Stand.



Specifications

Display: Red, yellow, and green LED buzzer.

Accuracy: + / - 15%

Weight: 1.0 lb (454vgrams).

Environment: 32°F to 100°F (0°C to 38°C); 15% to 95% RH.

Testing Range: $10^5 - 10^8$ ohms

Wrist Straps

High Range: 2M, 5M, 10M, 25M, 35M, 50M, 75M, 100M ohms.

Low Range: 500k, 750k ohms

Footwear

High Range: 2M, 5M, 10M, 25M, 35M, 50M, 75M, 100M ohms.

Low Range: 500k, 750k ohms



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ACL Incorporated registered to
ISO 9001:2008
Certificate NO. 10002746

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Installation Guide

1. Select a suitable site near an AC power outlet if adapter is to be used. If outlet is unavailable use alkaline battery. Do not use both as the battery may over heat.
2. If testing heel grounders, select position for foot plate.
3. If wall mounting, select a spot approximately 5 feet up from the floor. It is encouraged to plug in the footplate lead to ensure there is enough wire available to reach tester before mounting.
4. Drill four .20-inch diameter (5mm) holes at the marked position in a 2.5" rectangular pattern. Insert the plastic wall anchors and attach screws through the hook disc into the wall.
5. Attach the enclosed adhesion strips to the mounted anchors. Peel off the adhesive backing covers to expose the adhesive. Press meter against exposed adhesive to mount meter to the wall.
6. To remove the meter from the hook and loop strips, gently lift the meter with two hands from the bottom corners.
7. The meter can also be attached to work surfaces using two adhesive backed hook and loop strips provided.

Testing

It is important to test wrist straps and footwear daily to ensure they function properly and to minimize charge generation on the human body, which may cause damage to integrated circuits. Wrist straps and heel grounders are the primary techniques used to drain and minimize electrical charges from the body. Too fast a drain will cause sparking, field generation, and failures. Too low an electrical path can cause electrical shock. Too high an electrical path can cause integrated circuit damage. To adapt to ISO-9000 certification the results should be recorded and monitored.

Wrist Straps

The 780 Economy Combo Tester will verify that there is a safe and continuous electrical path between the user, wrist strap and the ground cord. When using the meter for wrist strap testing or monitoring, the following is suggested:

1. Position the switch located on the front of the meter to the wrist strap position.
2. Put the wrist strap on with the ground cord attached. Be sure the strap is in snug contact with the wrist. Dry skin, hair, or foreign contaminants may cause failures for well functioning wrist straps that are in specification.
3. Insert the end of the ground cord into the wrist jack located on the front of the Combo-Tester case.
4. Depress and hold metal test plate until the LED illuminates.
5. If the Green “OK” LED illuminates, the wrist strap is functioning within the resistance specification range and therefore may be used to handle static sensitive devices.
6. If either the red “Too High” or red “Too Low” LED illuminates and the buzzer activates, the worker must test the wrist strap cord immediately. To test a faulty cord, leave the cord plugged into the meter and detach the wrist cord from the strap. Press the wrist strap metal snap-end of the cord against the stainless steel test plate avoiding skin contact. If the cord tests “FAIL” replace the cord.
7. If the cord passes, tighten the band cuff around wrist and retest using the cord. If it continues to fail, apply ESD hand lotion to wrist area and repeat test. Replace wristband if failure continues.

Footwear

1. Position the foot plate on the floor directly in front of the Combo-Tester. Check to assure the plate does not slide when the meter is being used.
2. Insert the 3.5mm stereo plug into socket marked “Heel Plate” on the base of the meter.
3. Position the switch on the front of the meter to the footwear position.
4. Stand on the foot plate making sure that each foot is aligned on the left and right stainless steel pad.

5. Depress and hold the metal test plate switch until an LED illuminates.
6. If the green “OK LED lights, then the ESD shoes or heel grounders are functioning within specifications.
7. If either of the “FAIL LOW” or “FAIL HIGH” red LEDs glow along with the activation of the buzzer for either foot, then the user should check the shoe or heel grounder. Check heel grounder for good skin contact and dirt contamination.

Wrist Straps & Footwear

The ACL 780 Economy Tester will test both feet and wrist strap simultaneously. If there is a failure, the meter defaults in the following order: Right foot, Left foot, wrist.

1. Position the rocker switch between the wrist and heel positions.
2. Position the foot plate on the floor directly in front of the Combo-Tester. Check to assure the plate does not slide when the meter is being used.
3. Insert the 3.5mm stereo plug into socket marked “Heel Plate” on the base of the meter.
4. Stand on the foot plate making sure that each foot is aligned on the left and right stainless steel pad.
5. Put the wrist strap on with the ground cord attached. Be sure the strap is in snug contact with the wrist. Dry skin, hair, or foreign contaminants may cause failures for well functioning wrist straps that are in specification.
6. Insert the end of the wrist strap’s ground cord into the wrist jack located on the front of the Combo-Tester case.
7. Depress and hold the metal test plate switch until an LED illuminates
8. If the green “OK LED lights, then the ESD shoes or heel grounders & wrist straps are functioning within specifications.
9. If there is a failure, the meter defaults in the following order: Right foot, Left foot, wrist. If either of the “FAIL LOW” or “FAIL HIGH” red LEDs glow along with the activation of the buzzer for either foot, then the user should check the shoe or heel grounder. Check heel grounder for good skin contact and dirt contamination.
10. If either the red “Too High” or red “Too Low” LED illuminates and the buzzer activates, the worker must test the wrist strap cord immediately. To test a faulty cord, leave the cord plugged into the meter and detach the wrist cord from the strap. Press the wrist strap metal snap-end of the cord against the stainless steel test plate avoiding skin contact. If the cord tests “FAIL” replace the cord.
11. If the cord passes, tighten the band cuff around wrist and retest using the cord. If it continues to fail, apply ESD hand lotion to wrist area and repeat test. Replace wristband if failure continues.

The 780 Economy Tester is calibrated to NIST traceable standards.

Tester Adjustments

The tester can be adjusted for various electrical resistances by opening the meter case and pressing the dipswitches corresponding to the desired test ranges. These resistance ranges depend on what test standard, i.e. (EOS-CECC) the user follows. The user must know what resistance range values are acceptable for their wrist straps, shoes, and heel grounders. The 780 Economy Tester comes preset to EOS/ESD recommended test limits and are represented in **bold**.

<u>Foot Low</u>	<u>sw1</u>	
.5M	off	
.75M	ON	(US & IEC default)

<u>Wrist Low</u>	<u>sw2</u>	
.5M	off	
.75M	ON	(US & IEC default)

<u>Foot High</u>	<u>sw3</u>	<u>sw4</u>	<u>sw5</u>	
2M	off	off	off	
5M	ON	off	off	
10M	off	ON	off	
25M	ON	ON	off	
35M	off	off	ON	(IEC & CECC default)
50M	ON	off	ON	
75M	off	ON	ON	
100M	ON	ON	ON	(US default)

<u>Wrist High</u>	<u>sw6</u>	<u>sw7</u>	<u>sw8</u>	
2M	off	off	off	
5M	ON	off	off	
10M	off	ON	off	(US default)
25M	ON	ON	off	
35M	off	off	ON	(IEC & CECC default)
50M	ON	off	ON	
75M	off	ON	ON	
100M	ON	ON	ON	

ACL 780 ECONOMY TESTER Calibration Check

The ACL-780 can be adjusted to various electrical resistance specifications (limits) depending on what test standard (EOS for US and CEEC for Europe) the user follows or what a company requires. To change settings, either open the ACL 780 meter and adjust the dip-switches to desired resistance value (See below for values).

If desired to trace to NIST calibration, send to the ACL meter department in order to determine and trace accuracy. Remember the ACL 780 tester cannot be calibrated. The meters accuracy can only be checked. The meter has resistor and capacitor on the circuit board. Every time the tester is used its self calibrates against this 1% resistor!!

1. Purchase 1% resistors on each side of the resistance value that is set in the meter.

Factory settings (in bold) require the following resistors.

- a. Foot Low (**.75M**) 675k & 825k
- b. Wrist Low (**.75M**) 675k & 825k
- c. Foot High (**100M**) 90 & 110M
- d. Wrist High (**10M**) - 9M & 11M

2. Solder, clip or twist wires to both ends of the resistors.

- a. Attach one end of the resistor to the stainless steel “Press and Hold” button on the front of the meter using an alligator clip.
- b. Attach the other end of the resistor to the receptacle that is being tested using the appropriate plug attachment: banana plug or stereo plug for wrist, stereo plug for testing footplate. When the feet are checked both the right and left leg of the circuit must have a load on the wire. If not the unloaded leg will buzz. To accomplish this, a stereo plug with two pigtail wires must be used. Each of these two wires must have a resistance load on one end. The other end must be attached to the power press switch.

3. To Begin test:

- a. Position toggle switch to Wrist setting when testing the wrist limits or the Foot setting when testing the foot limits. Remember when testing feet a stereo plug is inserted into the jack that usually has the foot plate plug inserted. The other end has the resistor attached.
 - b. When testing wrist limits, plug resistor in wrist strap plug-in. When testing foot limits, insert two resistors in the plug-in jack usually used for the foot plate.
4. Press the power button and compare to the resistance range to be calibrated.
 5. Release the power button and compare the pass or fail response to limits being tested.
 6. Since the meter is self calibrating and self zoning there is no adjustment necessary.