

492E

WRIST STRAP & FOOTWEAR TESTER

MANUAL OPERATION

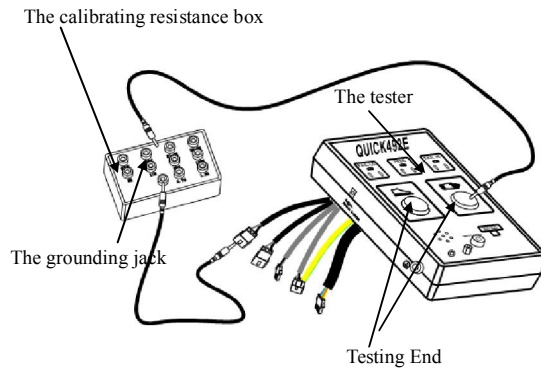
Thank you for purchasing this tester. The device is exclusively designed for testing the wearing of the wrist strap and footwear. Please carefully read this manual before operating the device. Store this manual in a safe, easily accessible place for future reference.

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If user wants to change the testing modes or the testing resistances, adjust the digital switches in the inside of the tester (take off the mark), and move the keys to the corresponding location and then testing as the above steps (refer to “7.1 calibrating the parameters” and “5.1 mode”).

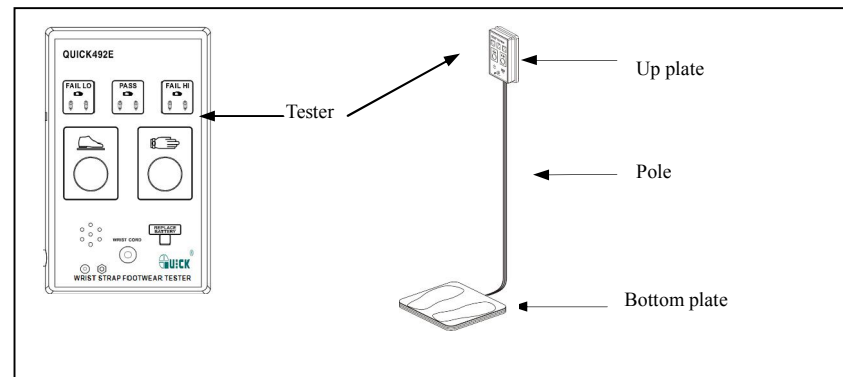
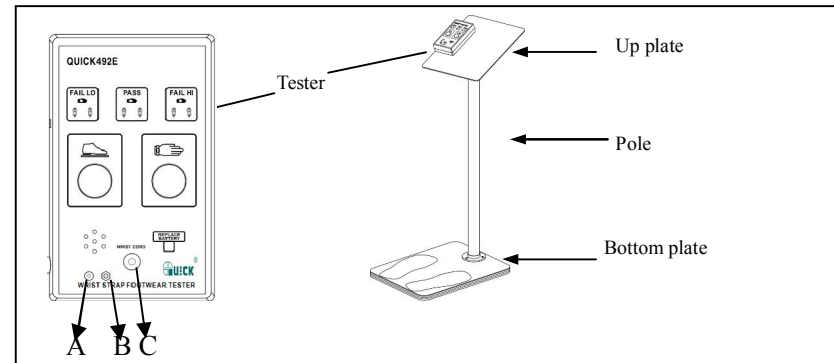
The adjusting authority will make the adjusting in the company to be of no effect. Suggest maintain the unit by the original company or authorized services.



1. Summary

The tester is according with standards ANSI ESD S20.20 and can test the wearing quickly and conveniently of the wrist strap and the footwear (feet loops, conductive footwear and antistatic footwear). The testing parameters have been setting but the users can adjust the parameters by themselves as the demands. It is easy to operate and when the green lights are on means the wearing is all well and the red light being on means the wearing is not well (refer to the testing).

2. Picture



Record: single line mode connect B or C
double line mode connect A

3. Specifications and Characteristics

3.1 Specifications

VOLTAGE	9V BATTERY (8-12VDC/100mA)
	Access Signal output: Volts maxi: $\pm 400V$ (peak, DC or AC) Close signal output: switched current: 100mA, contact resistance 30 Ω
	Test NG: not close Test ok : close
	Light output: nine test light (three green light, three FAIL LO, three AIL HI) wrist strap and foot judge state
	Low voltage output
precision	$\pm 10\%$
Main size	160mm×100mm×40mm
Foot size	360mm×330mm×25mm (no pole)
	480mm×360mm×25mm (pole)
Total weight	Net weight: 4.53kg, gross weight: 5.55 kg (no pole)
	Net weight: 7.2kg, gross weight: 9.54kg (pole)
communicate	RS232 (RS485 other order)

3.2 Characteristics

1. The tester can test separately or together the wearing state of the wrist cord and footwear of single foot or double feet. Judge the wearing of every part.
2. Put out a signal to the entrance guarding system with the additional connecting line for controlling the people in and out the locations in which need to defend the static.
3. For stable testing and correct information, the tester tests the information with tiny current.

Foot loop, conductive footwear or antistatic footwear testing: 100K Ω /750K Ω -100M Ω /1G Ω

Results are as followings while testing the above resistances:

	Standard Resistance	Output
100K Ω	100K Ω	Red (FAIL LO)
	110K Ω	Green (PASS)
500 K Ω	500 K Ω	Red (FAIL LO)
	550 K Ω	Green (PASS)
750K Ω	750K Ω	Red (FAIL LO)
	825K Ω	Green (PASS)
35M Ω	31.5M Ω	Green (PASS)
	35M Ω	Red (FAIL HI)
100M Ω	90M Ω	Green (PASS)
	100M Ω	Red (FAIL HI)
1G Ω	0.9G Ω	Green (PASS)
	1.0G Ω	Red (FAIL HI)

7.2 Calibration Instruction

The calibrating method is very easy. In the integrated testing mode, connect the tester with the calibrating resistance box.

When testing the low end or high end of the Wrist Strap, Foot loop, conductive footwear or antistatic footwear, the tester will clue, namely, the corresponding light of the wrist side or footwear side will be on.

twin-core wire is used to connect with the power cord (the white is positive end and the black is the negative end).

7. Calibration

7.1 Calibrating the Parameters

Wrist Strap testing: 750K Ω -10M Ω /35 M Ω

Results are as followings while testing the above resistances:

	Standard Resistance	Output
100K	100 K Ω	Red (FAIL LO)
	110 K Ω	Green (PASS)
750K Ω	750K Ω	Red (FAIL LO)
	825K Ω	Green (PASS)
10M Ω	9M Ω	Green (PASS)
	10M Ω	Red (FAIL HI)
35 M Ω	31.5 M Ω	Green (PASS)
	35M Ω	Red (FAIL HI)

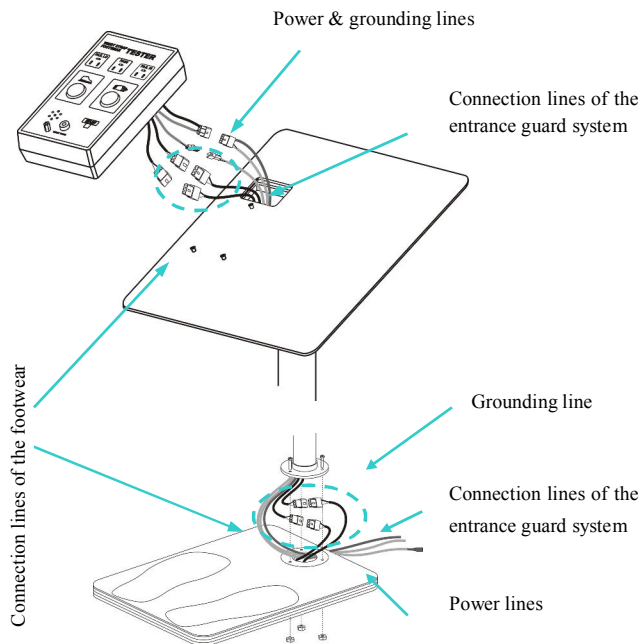
- 1) Stand on the pediform bottom plates and then press the circle button with feet icon or hand icon above it and keep about one to two seconds.
- 2) If the three green lights “PASS” are on, it means the uses and functions of the wrist strap cord and the footwear are well.
- 3) If the corresponding red light “FAIL LO” or “FAIL HI” is on and hearing the alarming sound, it means the wearing of the corresponding the wrist strap cord or the footwear has something wrong. Check the wearing and connection are well or not.

4. When the power of the battery is lower, the low voltage alarming and the red light in the battery replace is on.
5. When test gallery all past, switching signal output, at the sametime enabling signal output, otherwise enabling signal close. When one test gallery not OK,, also enabling signal output, all ok, enabling signal close.enabling signal and close signal by different output.
6. Signal output use KAQW214 relay, galvanization maxi: $\pm 100\text{mA}$, voltage maxi: $\pm 400\text{V}$.
7. Use RS232 or RS485, test result and judge send to PC.Tester using RS232.

4. Installation and Connection

4.1 Installation

1. Connection lines of the footwear: The connection plugs and sockets are white and the connection lines are black twin-core wires. One of the black twin-core wires is white and it is the footwear testing wire, the other is black and it is the grounding wire.
2. Connection lines of the entrance guard system: The connection plugs and sockets are black and the connection lines are gray twin-core wire.
3. Connection lines of the power supply & grounding: The four-pin connection plugs and sockets are white. The yellow-green line is used to grounding. And the gray
4. Message connecting line (RS232) :Pin and socket is four-core black.Green-line as common port, red-line (RXD) as signal receive line, blue-line as signal send line.
5. **Foot testing connect: take out pole,** foot test line cross over pole.The top test line (three-core white plug) and the tergal test line (three-core white plug) connected, the bottom test line and bottem plate line connected.

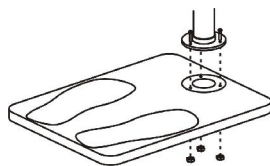


4.2 Connections

1. **Connection of the footwear:** take out the pole from the package and then put through the connection lines of the footwear from the pole. The connection lines with white three pin plug coming out from the top connects with the connection lines with white three pin socket on the back of the tester. The other end connection lines come out from the bottom of the pole connects with the corresponding socket putting thought from the bottom plate.

NOTE: After connecting the lines of the footwear, please do the test. If the connection is wrong, the output single will misdirect. Here, it needs to exchange the plugs and connect again.

2. **FIX THE POLE.** Take out the three hexangular screws M6*25 and the fix the pole on the bottom plate with the screws, and screwing down the screws.

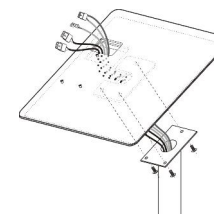


6. Replace the Battery

The tester including an alarming circuit. When the voltage is not enough in the testing process, the light in the “REPLACE BATTERY” will be on. At the time, please stop the testing process and replace a new battery for precise testing.

The method of replacing the battery is very easy. Move out the battery lid at the back of the tester and replace a new battery.

3. **FIX THE TOP PLATE.** Fasten the top plate on the pole with the three screws and nuts which are the accessories. After that, by the three holes on the back of tester, hang the tester on the three screws on the left side of the top plate.



4. The connection lines of the entrance guard system (gray) and the power grounding lines (gray & yellow-green) are optional lines. When using, put the connection lines of the entrance guard system or the power grounding lines through the pole and come out from the top of the pole, and then connection with the plugs on the back of the tester. The other side puts through the pole and comes out from the bottom of the pole.

NOTE: if it connects with the entrance guard system, the signal of the contact signal must be according with it, or else, it may damage the tester or make unexpected accident.

5.3.2 Integrating Test

1. inserting the two connector plugs in the pole to the corresponding sockets “FOOTIN” (left foot and right Foot) at the under-left side of the tester panel.
2. the wrist strap and then insert the cord of it to the wrist cord socket (WRIST CORD) or connect it with the joint pole.
3. Connect one side of the connecting line (with Crocodilian clamp) to the wrist strap cord, another side insert into the wrist cord socket.
4. If the red light “FAIL LO” or “FAIL HI” with hand icon is on and hear the alarming sound, check the wearing and connections are well or not.

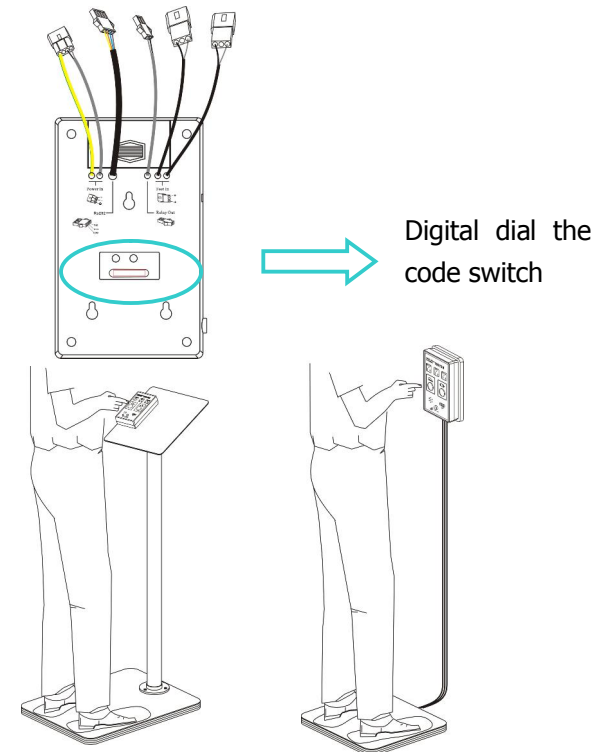
2. Test the wearing of the foot loop or conductive footwear or antistatic footwear

- 1) Stand on the two metal footmarks on the bottom plate after wearing the foot loop, conductive footwear or antistatic footwear.
- 2) Press the circle button on the left with feet icon above it and keep about one to two seconds.
- 3) If the green light “PASS” is on, it means the wearing of the corresponding feet loops or conductive footwear or antistatic footwear is well.
- 4) If the red light “FAIL LO” or “FAIL HI” with foot icon is on and hearing the alarming sound, it means the wearing of the corresponding feet loops or conductive footwear or antistatic footwear has something wrong. Check the wearing and connecting is well or not.

5. Testing illustrate

5.1 MODE

There are two switches inside the back of the tester and the functions of them are independent. One switch controls the testing modes, and the other controls the ranges of the testing resistances. (The switch is in the inside of the unit’s back and it can be see after moving the paster.) User can adjust the testing modes and the ranges of the testing resistances, suitable the demands. The testing modes include integrating test and single test.



Test the footwear

Test the footwear (not standard fittings)

Test			Digit dial switch (switch be white)								Explain
			1	2	3	4	5	6	7	8	
Comprehensive test				☐							Also test wrist and foot
Single test				☐							Only test wrist or foot
Single test			☐							☐	double test mode
Double test										☐	singlet test mode
Wrist strap	LOW (KΩ)	100								☐	Wrist LOW 100KΩ
		750								☐	Wrist LOW 750KΩ
	HIGH (MΩ)	10		☐							Wrist HIGH 10MΩ
		35		☐							Wrist HIGH 35MΩ
FOOT	LOW (KΩ)	100				☐	☐				FOOT LOW 100KΩ
		500				☐	☐				FOOT LOW 500KΩ
		750				☐					FOOT LOW 750KΩ
	HIGH (MΩ)	35							☐		FOOT HIGH 35MΩ
		100			☐				☐		FOOT HIGH 100MΩ
		1000			☐				☐		FOOT HIGH 1000MΩ

- When the **key1** to the off, and **key2** to on, express **comprehensive test**, at the same time **test wrist strap and foot and ground connection**.
- When the **key1** to the off, and **key2** to off, express **alone test**, only test foot and ground connection.
- When the **key3** to the on, express wrist strap 35MΩ
- When the **key3** to the off, express wrist strap wrist strap 10 up MΩ . wrist low 750KΩ
- When the **key4** on and When the **key7** to the off, express foot up 1000MΩ .
- When the **key4** to the off and When the **key7** to the off, express foot up 100 MΩ .
When the **key4** to the on, express foot up 35 MΩ .
When the **key5** to the on, express foot low 750 KΩ
When the **key5** to the off, When the **key6** to the on, express foot low 500KΩ
When the **key5** to the off, When the **key6** to the off, express foot low 100KΩ
- When the **key1** to the off, tap position setting by dial switch, When the **key 10** to on, **double wrist test**. When the **key 10** to off, **signal wrist test**.

5.2 Setting mode in the factory

The setting mode in the factory is integrating test mode. At the time, the resistances of the wrist strap and footwear are as followings (except special order):

wrist strap resistance setting : low 750KΩ ,high 10MΩ ;

Footwear resistance setting: low 750KΩ , high 100MΩ .

5.3 Operation Instruction

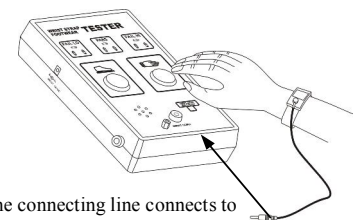
Note:

- Not touch any other metal parts in the testing process.
- Not use the meter when the battery is not enough for the precise measurement.

5.3.1 Single Testing

In the single testing mode, only test separately the wearing situation of the wrist strap, foot loop, conductive footwear or antistatic footwear.

1. Test the wearing of the wrist strap



- Wear the wrist strap and then insert the cord of it to the wrist cord socket or connect it with the joint pole. Connect one side of the connecting line (with Crocodilian clamp) to the wrist strap cord, another side insert into the wrist cord socket.
- Press the circle button with hand icon above it and keep about one to two seconds.
- If the green light "PASS" is on, it means the wearing of the wrist strap is well.