

Manual



Wrist Strap & Shoe Tester WST 100

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Contents

1. General Information	3
2. Specifications	4
3. Caption	5
4. Function	6
4.1. Set-Up Mode	6
4.2. Limits	7
4.3. Evaluation	7
4.4. Battery Changes	7
4.5. Connection	7
4.6. Plug Connection	8
4.7. Shoe Electrode Connection	8
4.8. Connection a Door Opener	9
4.9. Optional Accessories	9
5. Set-Up of the Function and the Limits	10
5.1. Sequence	10
5.2. Operating Mode Set-Up	10
5.3. Calibration Resistors	11
5.4. Calibration	11
5.5. Calibration Resistor Module	12
6. Guarantee Items	12
7. Disposal of Batteries and Device	13
8. Scope of Delivery	13

1. General Information

The WST100 serves the functions test of electrostatic wrist straps and conductive footwear. Before you access to ESD-secured areas it should be tested the ESD precautions like wrist strap and conductive footwear on correct function.

The WST100 is a reliable and advantageous solution for this. The appliance is transportable and through its battery powers everywhere employable.

The setting of the limits and the calibration can be done from the customer himself, very simply.

Hand appliance in a plastic housing 150mm x 88mm with complete μ C controlled. The shoe electrode for this unit is 430mm x 500mm of a plastic plate included 2 shoe electrodes for the left and right shoe.

The display includes 7 light-emitting-diodes (LED's):

A green LED (8mm) for o.k.

A faulty measurement is displayed with one red LED each for wrist strap, shoe right or shoe left, \leq to small, or \geq to big

For the additional acoustic ad, a buzzer is integrated.

The appliance possesses an integrated relay 60V / 2A (in the shoe electrode).

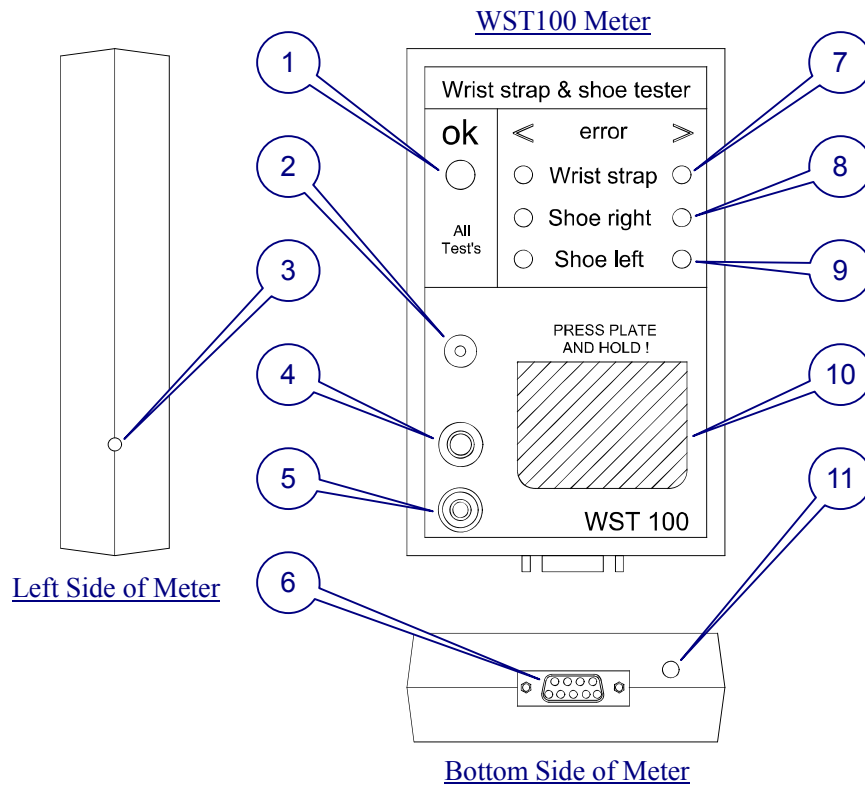
The appliance is powered with 4x Mignon (AA) batteries, optional: NiMH rechargeable batteries. With approximately 100 measurements per day and 5 days per week the unit will run one year with battery power.

With the optional plug charger and NiMH accumulators, the appliance can be run permanently.

2. Specifications

- Dimension: Hand appliance 150mm x 88mm x 35mm
- Shoe Electrode: ca. 430mm x 500mm x 10mm (L x B x H)
- Weight: Hand appliance 250 gr
- Shoe Electrode: 700 gr
- Power supply: 4 x Mignon (AA) in the hand appliance
- Optional: plug power adapter 7,5V / 300mA via Shoe Electrode with 4 x Mignon Battery NiMH (rechargeable)
- Display: 1 LED (8mm) green, 6 LEDS (5mm) red, 1 buzzer
- Relay contact: Included in the shoe electrode, potential- free contact (60V / 2A)
- Principle of Measurement: Current / Voltage Converter
- Measure Voltage: 20V \pm 5%
- Connection: All connections over 9 pol. Sub-D Connector
- Limits: The limits are separate for the wrist strap test and the shoe test
Lower limit from 0.... 2M Ω
Upper limit from 2.... 200M Ω
Special limits are possible on customers' need!

2. Caption



1. All pass status: Green LED
2. Wrist strap cord snap
3. Set-up button (H button)
4. Wrist strap cord snap
5. Wrist strap cord jack
6. 9 pol. Sub-D connector: Connect to foot plate or calibrated resistor module
7. Wrist strap status: Red LED
8. Right shoe status: Red LED
9. Left shoe status: Red LED
10. Test plate: Press and hold test plate with a finger
11. Buzzer

4. Function

The to testing person should stand on the contact plates of the shoe electrode with both shoes. The Wrist strap-cables are pocketed at the measuring instrument. Then press and hold the Test-Plate on the appliance with a finger. By starting the measurement, a short acoustic signal sounds. At first, the Resistor of the Wrist strap is measured, after it the resistors from the left one and from the right shoe. It is tested whether the resistance values are within the lower and upper limits. Are all resistance values between the lower and upper limits; it sounds a short acoustic signal and the green LED lights. Is one or several resistance value out of the low or upper limit, no acoustic signal sounds only the appropriate red < or > LED lights.

Also several mistakes can be represented simultaneously.

For example: Wrist strap > and Shoe left <

If the Test Plate became free, the displayed LED's lights approximately 2 Second more, than the appliance switches off.

4.1. In the Set-Up – Mode you can chose different functions

Test - Mode:

- Only wrist strap test without Shoe - Test
- Only Shoe - Test with double shoe electrode
- Wrist strap and Shoe - Test with double shoe electrode
- Wrist strap and Shoe - Test with single shoe electrode

Relay Mode:

- Alarm Relay (Relay switches if mistakes)
- Door open Relay (Relay, relay switches if o.k.)

4.2. Limits

The low and upper limits are fixed by lower and upper calibrated resistors.

Factory default is:

- wrist strap test lower limit 750k Ω
 upper limit 10 M Ω
- Shoe test lower limit 750k Ω
 upper limit 35 M Ω

Other limits are possible without extra charge. The limits can be changed by the customer anytime (sees adjustment of the limits).

4.3. Evaluation

- lower limit Calibrated Value (LCV) LED <
 Calibrated Value (LCV)+10% LED OK
- Upper limit Calibrated Value (UCL)-10% LED OK
 Calibrated Value (UCL)+10% LED >

4.4. Battery Changes

The appliance possesses a battery supervision. If the battery voltage is below the limit, an acoustic signal sounds with approximately 1Hz. The batteries must be changed in this case. The battery compartment is at the underside of the appliance. When putting in new batteries look for the polarity !!

4.5. Connection

The connection with the appliance takes place at a 9pol.Sub D pin jack. Connecting at this is the Shoe Electrode, the optional Power supply, the Relay Output. It must be connected only one single cable to the hand appliance.

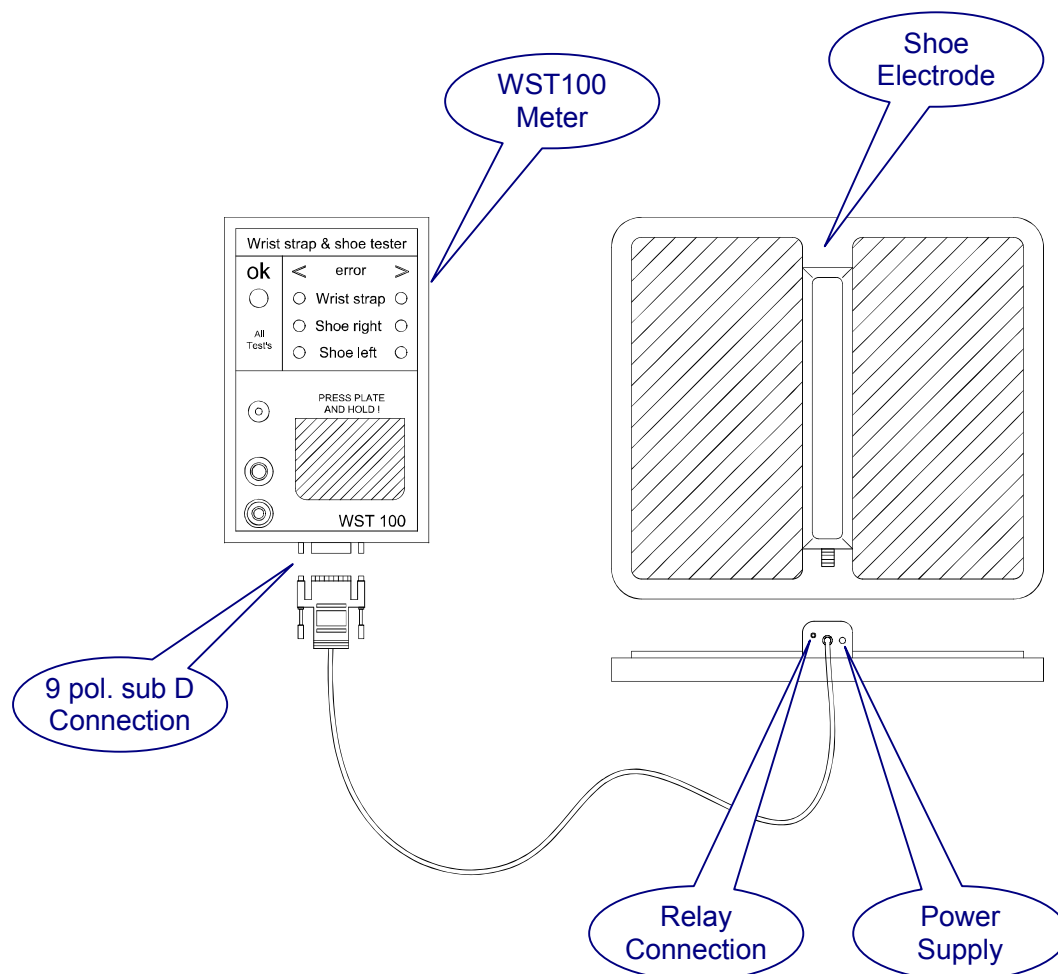
4.6. Plug Connection

- | | |
|------------------------------|---|
| 1 = U+ from Power supply | 6 = + Umeasure 20V= |
| 2 = PC out | 7 = Relay Contact |
| 3 = PC in | 8 = wrist strap |
| 4 = Shoe Electrode Left Shoe | 9 = Shoe Electrode Right Shoe (or single Electrode !) |
| 5 = GND (U- Power supply) | |

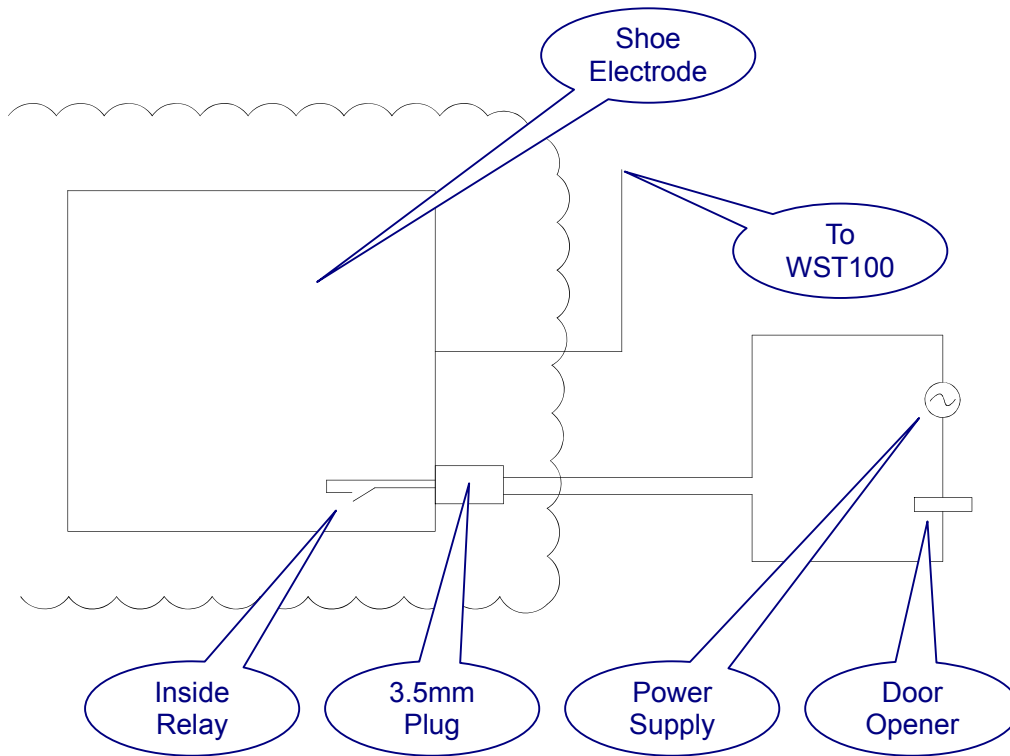
4.7. Shoe Electrode Connection

Power supply and relay connection led together with the shoe inputs to the shoe electrode. At the front side from the shoe electrode there are the plugs for the power supply (right) and for the relay output (left).

Relay contact 60V 0,5A potential-free



4.8. Connecting a Door-Opener



4.9. Optional Accessories

WST-100 RE

Calibrated Resistor for the lower and upper limit with Certification of Calibration

WST-100 NT

Charger Set including 4 x NiMH Battery Type Mignon and a plug power supply, which is connected to the Shoe Electrode.

WST-100 WB

Wall Connecting Plate with test instruction. Front side German / Back side English with pressure button fortification of the WST 100

5. Set-up of the Function and the Limits

5.1. Sequence

- Press and hold button H (hide), with a small screw driver,
- Press Test Plate shortly è buzzer sounds!
- button H (hide) off

5.2. Set-Up Mode → Operating Mode puts in

- By pressing the Test Plate you can now change the operating mode like :
 1. All Red LED's → Wrist Strap+Shoe Right+Left Test
 2. Only Wrist Strap LED's (< >) → Only Wrist Strap Test
 3. Wrist Strap+Shoe Right LED's (< >) → Wrist Strap+Shoe Right Test
(single shoe Electrode)
 4. Shoe Right + Left LED's (< >) → Only Shoe Right+Left Test
(without wrist strap)
 - Through short pressing the button H your selected operating mode is saved.
 - By pressing the Test Plate you can select now the relay mode
 1. Only green LED → Relay is in door open mode
(switch on by o.k.)
 2. All red LED's → Relay is in Alarm mode
(switch on by error)
 - Through short pressing the button H your selected relay mode is saved.
 - The buzzer sounds for approximately 1 second, than all LED's lights.
 - Through pressing the Test Plate (> 1sec), the Set-Up can now be left.
 - Through short pressing the button H you can continue with the adjustment of the limits.
-

5.3. Set-Up Mode → Read Calibration Resistors

- The LED Wrist Strap < lights (*only if wrist strap is tested*).
- Connect Calibration Resistor Module for Wrist Strap limits, than press shortly button H.
- If value is O.K., the green LED lights (+ buzzers for 1 seconds), than the LED Wrist Strap > lights.
- Press shortly button “Taste H”.
- If value is O.K., the green LED lights (+ buzzers for 1 second.), Then Shoe Right/Left < lights. (*Mode “Only Wrist strap” is not selected*)
- Connect Calibration Resistor Module for shoe limits, than press shortly button H.
- If value is OK, the green LED lights (+ buzzers for 1 seconds)
- than the LED’s Shoe Right/Left > lights.
- Press shortly button H.
- If value is OK, the green LED lights.
- The new Limits are saved
- By pressing the Test Plate you can now switch off the WST100 !

5.4. Calibration

Since the values are written directly with the attitude into the EEPROM, the discontinuance of the limits with calibrated resistors is also the calibration of the appliance simultaneously.

In orders have to a restorable to the standardizes, the calibrated resistors can be calibrated by the manufacturer annually.

With these calibrated resistors, all appliances of the customer can then be calibrated again.

Suggested calibration cycles: annual

5.5. Calibrated Resistor Module RE100

A calibrated resistor modulo consists of a 9 pole. Sub-D Plug with the calibrated resistors for the lower and upper limits. Following Standard Modules are offered:

A	lower limit 750k Ω	upper limit 5M Ω
B	lower limit 750k Ω	upper limit 10M Ω
C	lower limit 750k Ω	upper limit 35M Ω
D	lower limit 750k Ω	upper limit 50M Ω
E	lower limit 100k Ω	upper limit 35M Ω

It can be delivered every desired resistance combination within the limit areas without extra charge!

Limit Range:

lower limit: 0 2 M Ω

upper limit: 2 200 M Ω

Special Range are available!

If a Calibration Resistor is connected with a value outside of these areas, then all 6 red LED's flashes.

5 x → Error Calibration Value

Then the unit switches off.

Important! In this case you must repeat the complete Set – Up !!!

6. Guarantee Items

We provide a 12 month guarantee in case of proper application according to the manual. Excluded of the guarantee are: The battery resp. the accumulator, damage by electric shock, wrong grounding and mechanical damage of the device. The guarantee expires if the device was opened.

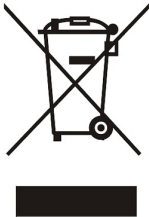
7. Disposal of Batteries and Device

Every consumer must by law, dispose of all batteries and accumulators at a municipal or commercial collection center, free of charge. Thereby, the disposal will be environmentally friendly. Batteries and accumulators are marked with the following symbol:



This crossed out garbage bin means that you may not dispose of batteries and Accumulators in the household waste. Under this sign you may also find Sometimes, in addition, the following abbreviations related to the materials Contents:
Pb = lead, Cd = cadmium and Hg = mercury.

When the equipment is not used anymore, every consumer must by law, separate the equipment from the household waste and bring it to a municipal collection center. Old electrical equipment is accepted there free of charge. This will ensure that the old equipment is handled by experts and it will avoid negative impact on the environment. Electrical equipment is marked with the following symbol:



The black bar under the crossed out garbage bin indicates that the equipment was put into circulation after August 13, 2005.

8. Scope of Delivery

The basic equipment of the electrostatic field meter includes the following components:

- WST-100 Meter
- Shoe Electrode with connect cable
- 4 x Mignon(AA) Batteries
- Grounding cable with alligator clip
- Manual
- Certificate of calibration

Optional:

- WST-100 RE Calibrated Resistor
- WST-100 NT Charger Set
- WST-100 WB Wall Plate