User Manual

IONIZER TESTER
CPM54

Part.-No.: 7100.CPM54

■ Scope of Supply

- Ionizer Tester CPM54
- Hand probe & measuring cable (WT-function)
- Grounding cable
- 3 pcs rechargeable Lithium-Ionen-battery
- Charger with EU plug
- Conductive carrying case
- User manual available for download (www.warmbier.com)
- Calibration certificate „German / English“

■ Description - CPM54

The Ionizer Tester CPM54 is a measuring device for standard conform measurements of ionizer's decay time and offset voltages and for walking test (Body Voltage Test). It supports fully automatic testing of positive-, negative discharges and offset voltages.

■ Technical Data

Test range	± 2000V, 0-60s
Resolution	1V, 0,1s
Display	Colour display
Power supply	3 Lithium-Ionen-batteries, Type 18650, FlatTop, 3,7 V, 2,2Ah
Housing	Plastic
Safety class	IP20
Operating conditions	10°C to 40°C / up to 60% r.h.
Analog output	+/- 5V
Dimensions	150×173×125 mm (W x D x H)
Weight including batteries	1 kg
Fastening option	1/4“ – Tripod socket
Operating modes	Decay mode Offset/BVT mode
Serial number	Label on back side of housing
Design	For indoor operation

■ Calibration

We recommend a calibration cycle of 2 years.

■ Warranty

We grant a guarantee of **12 months** if handled correctly in accordance with the user manual.
This does not apply to the Lithium-Ionen-batteries.

The warranty expires in the event of mechanical damage to the ionizer tester and/or unauthorized opening of the device!

■ Installation

Insert all three Lithium-Ion batteries into the battery compartment. **Observe the polarity!** The negative pole must point to the spring contact. Connect the supplied charger and charge the batteries.
After charging the device it is ready to use. You must disconnect the charger for operation.

■ Power Supply

The CPM54 is powered with three Lithium-Ion batteries. The battery runtime is app. 6 operating hours.

■ Settings

Decay measurement		
Start Voltage	Start voltage for the measurement	1000V, 500V, 250V
Stop Voltage	End voltage for the measurement	100V, 50V, 35V
Decay Time	Allowed time for decay	20s, 10s, 5s
Offset Limit	Maximum allowed voltage during offset measurement	100V, 35V
Offset Time	Offset measurement time	10s, 60s
Offset/BVT measurement		
Alarm Level	Voltage level for audible alarm	off, 50V, 100V, 250V, 500V, 1000 V

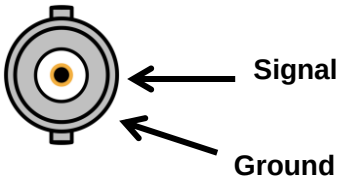
■ Connection

Ground

The device must be grounded on the 4mm grounding socket. The connection must be low ohmic without resistor.

Analog out

The sensor plate signal can be logged with the analog output in factor 500:1.



Charger

Connection for the battery charger. The device is out of operation during charging, only charge condition is displayed.

Charge conditions	
	Battery is charging (Remaining time app. 3,5h with 2,2Ah Battery)
	Battery is charging (Remaining time app. 1-2h with 2,2Ah Battery)
	Charging nearly finished (Device can be used)
	Charging is finished (Charger is still connected)

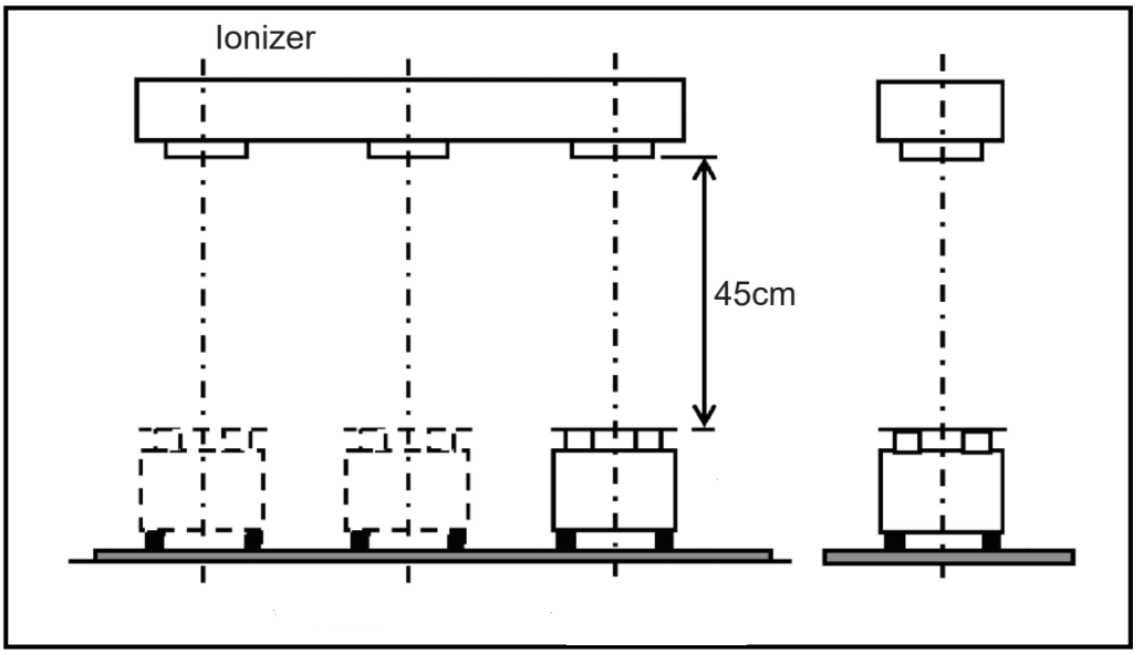
■ Safety Instructions

Please read the following notes.

- The device generates high electrical voltage. Do not try to open the device or change its construction. High-Voltage danger!
- The device must be grounded. **Ground** the device on the 4 mm banana plug socket on the side of the unit directly with “protective earth”. Earth bonding points (EBP) with a safety resistor shall not be used.
- The sensor plate of the unit must not get in contact with any powered item or electrostatically charged objects.
- Do not open the unit and do not try to repair the unit by yourself.
- Use the unit within the specified operating conditions.
- Use only the original charger which was included in the scope of delivery.
- Use a non-solvent based cleaner and soft fabric for cleaning.

■ Verification of Ionisation Units

Ground the device on the 4 mm banana plug socket **Ground.**
Position the device with the sensor plate headed to the air flow of the ionizer.
Select mode „**Decay**“ and start the measurement. Hold the distance to the ionizer constant during the measurement.



Example: Verification of overhead-ionizer

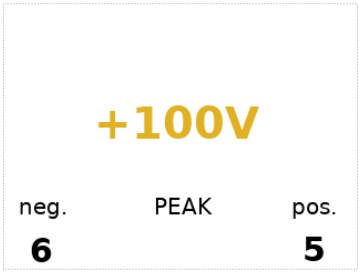
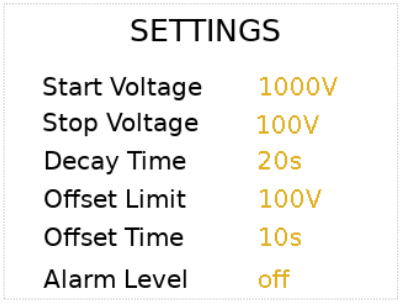
■ Verification of Body Voltages (Walking Test)

Ground the device on the 4 mm banana plug socket **Ground.**
Connect the handheld probe to the socket on the sensor plate. The sensor plate must not be touched during the measurement.
Select mode **Offset/BVT** and start the measurement.
You can perform now a walking test and the unit will show the latest value measured and the maximum positive and/or negative peak values.

■ Operation

Button On/Off:
Press one time briefly to switch the unit on, press long to switch the unit off (until you hear the audible signal). The device remembers the last operation mode either „Offset/BVT“ or „Decay“.
It will automatically switch off when it is not used for at least 5 minutes.

Button Mode/OK:
Changes the mode. When the unit is in STOP each key press switches to the next operation mode.

Mode	Function
Offset/BVT	Offset voltage and Body voltage Measurement. (Body Voltage Test). *Current value* *Peak-Hold value* 
Decay	Automatic Ionizer measurement *Current test* *Current value* 
Settings	Settings menu *Decay Start/Stop Voltage and Time* *Offset Limit und Zeit* *Audible Alarm level* 

Button Start/Stop:
Start / Stop of testing.
In the Offset/BVT mode the testing is started when the button was pressed and will be stopped when the button is pressed again. In „Stop“ the last Peak-Hold values will be displayed. Without stopping by pressing the button the measurement will be stopped after 1 minute. In Decay Mode the automatic measurement will be started or stopped before the maximum time limit is reached.

Mode: Offset/BVT

In this mode the current measurement is displayed.
The maximum values for each polarity (Peak-Hold) are indicated in the bottom line. The maximum values will stay frozen after “STOP.”
Because of this functionality you can also perform measurements at remote areas.
If activated in the settings menu an audible alarm can sound when [ALARM-LEVEL] is exceeded.

Mode: Decay

In this mode the automatic test will be started in the following steps:

1. Ground Test

The unit checks if the sensor plate is o.k. and that there are no “ripple” voltages present.
Any residual charge on the “test plate” will be discharged before the measurement.

- ➔ In case this test fails, please check if any contamination is present and check if there is a proper grounding.

2. Positive Test

The sensor plate will be charged to >+1000V and then the decay time is measured from [START-VOLTAGE] to [STOP-VOLTAGE].
In case there is no ionisation, then the charge on the “test plate” will stay and will lead to an error.
If ionisation is present, then the test plate will be discharged. The decay time will be indicated after the testing. The decay time must be within [DECAY-TIME] to pass the test.

3. Negative Test

The sensor plate will be charged to <-1000V and then the decay time is measured from [START-VOLTAGE] to [STOP-VOLTAGE].
In case there is no ionisation, then the charge on the “test plate” will stay and will lead to an error.
If ionisation is present, then the test plate will be discharged. The decay time will be indicated after the testing. The decay time must be within [DECAY-TIME] to pass the test.

4. Offset Test

Finally, it will be tested if the “offset voltage” is observed.
The test plate will be grounded and then it is checked if the plate stays below [OFFSET-LIMIT] during the time [OFFSET-TIME].

5. Result

After testing the results will be shown in the display.
Green: Test passed
Red: Test failed

Messages

Message	Root cause / Troubleshooting
STOP	Measurement was stopped
ground fail	Grounding test failed ➔ Check test plate if there are any parts touching or if there is a contamination ➔ Check the grounding path!
decay lo fail	Decay time was too fast (< 200ms) -> Test will be interrupted ➔ User Error, e.g. test plate was touched by operator
decay hi fail	Decay time too long (> 60s) ➔ Check the grounding path!
short circuit	Short circuit at test plate (test plate could not be charged)
offset failed	Offset voltage too high (>OFFSET-LIMIT). There is no proper ion balance. ➔ Check the ionizer (maybe emitter tips must be cleaned)
pos OK	Positive test was successful
neg OK	Negative test was successful
test passed	Test passed
test failed	Test failed
low battery	Battery should be changed soon, but you can still perform measurements
battery empty	Battery empty and unit will switch off ➔ Charge **or** change the battery
power failure	Other problem with power supply
power off	Unit will switch off
temp. warning	Temperature is critical, but you can still perform measurements
temp. failure	Temperature is too high; unit will switch off

■ Device return and environmentally compatible disposal

This instrument complies with IEC 63000:2016 (Restriction of the use of certain hazardous substances [RoHS]).

This device complies with the requirements according to category 9 of the ElectroG (monitoring and control instruments).
We identify our electrical and electronic devices in accordance with WEEE 2012/19/EU and ElektroG with the symbol shown to the right per DIN EN 50419.
These devices may not be disposed of with the trash.
Please contact our service department regarding the return of old devices.

If you use **batteries** or **rechargeable batteries** in your instrument or accessories which no longer function properly, they must be duly disposed of in compliance with the national regulations.
Batteries or rechargeable batteries may contain harmful substances or heavy metal such as lead (Pb), cadmium (Cd) or mercury (Hg).
The symbol shown to the right indicates that batteries or rechargeable batteries may not be disposed of with the trash, but must be delivered to collection points specially provided for this purpose.