

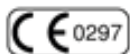
MORA[®]-Nova

A brand of Med-Tronik GmbH
World leader in bioresonance technology!

User manual



EN - English





Publisher: Med-Tronik GmbH Daimlerstraße 2
77948 Friesenheim Germany
Tel: +49 (0) 7821 / 63 33-0
Fax: +49 (0) 7821 / 63 33-50
E-Mail: info@med-tronik.de
Web: www.med-tronik.de

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1 Introduction



We congratulate you on the purchase of the MORA®-Nova device and wish you much fun and success while using it.

You have chosen a modern microelectronic device. Using the latest components, we developed this top-quality device that is the technological state-of-the-art.

This manual contains important information about your MORA®-Nova device. This includes the setup of the device and corresponding components as well as cleaning and maintenance.

Please notice this information and take it into account.

Your
Med-Tronik GmbH

2 Intended use

The MORA[®]-Nova device is used only for measurements.

The scope of application of MORA[®]-Nova is, to measure the patient's skin electrical resistance by application of a very weak electrical current via electrode and counter electrode on certain measurement points of the patient's skin. The determined values are displayed on a dial with scale graduations between 0 and 100. In this context "0" indicates an open circuit hence no measurement was made, whereas "100" indicates a short circuit, where the electrodes touch each other. Only values between 1 and 99 indicate a valid measurement.



Acute life-threatening situations must always be medicated according to current standards of emergency and intensive medicine.



MORA[®]-Nova is not intended for use in domestic environment.

3 Contraindications

Please note!

In case of:

- pregnancy
- electronic implants
- epilepsy
- lactation
- heavy depressions
- psychosis
- organ transplant
- acute life-threatening disease situations (for example, acute pulmonary embolism, myocardial infarction, stroke, acute intoxication)

MORA[®]-Nova must not be used!

4 Side effects

There are no known side effects.

5 Safety regulations

For safe and correct operation, use only original accessories.
Read the safety regulations before using the device.



Attention:

Protect your device from excessive heat (max. 40 °C) and humidity (max. 90% non-condensing).

This device belongs to protection class I, but for functional reasons may only be connected via a grounded power supply.

For a complete disconnection of the device from power, the power cord must be removed from the wall socket. Access to the wall socket must be ensured at all times.

5.1 Hazards when using MORA[®]-Nova

MORA[®]-Nova is built according to technical standards and current safety regulations. Nevertheless, hazards for well-being and life of the user or third parties, respectively impairment of MORA[®]-Nova or other equipment may occur.

MORA[®]-Nova is only to be used:

- For intended use
- When in perfect, technically safe condition

Breakdowns which might impair safety are to be resolved immediately. Unauthorized modifications and the use of unapproved spare parts and additional devices, which were not sold or recommended by the manufacturer, may cause fires, electrical shocks and injuries.

Should changes due to humidity or heat be evident, the device should not be used and should be exchanged for safety reasons.



Attention:

- Use only the correct operating voltage.
- Advisory signs must be clearly legible at all times.
- Damaged or illegible signs / labels must be replaced immediately



Important note:

The application of this device near portable phones, microwave ovens or other devices with strong electromagnetic fields can cause defective functionality. Therefore, keep a minimum distance of 3 meters to those devices.

5.2 Important information before initial operation

The most basic prerequisite for the safe handling and trouble-free use of MORA[®]-Nova is the knowledge of fundamental safety rules and regulations.

This instruction manual contains important notes for safely operating MORA[®]-Nova.

This instruction manual and in particular the safety references, are to be observed by all persons operating MORA[®]-Nova.

Furthermore, applicable regulations and provisions for accident prevention specific to the location must be observed.



Important note:

Before initial operation, check if the device functions correctly.

**Attention:**

The electrodes included in the delivery package are neither disinfected, nor delivered sterile. Please clean the electrodes as described in chapter 5.4 *Cleaning of device and electrodes*, since otherwise an infection or cross-contamination is possible.

Before each use, cleaning and disinfection must be carried out!

5.3 Qualified and authorized personnel

- Only suitably qualified and authorized personnel may operate this equipment. Qualified assumes that the personnel is qualified in assembly, control and use of the device and has completed an appropriate specialized training.
- The personnel must be a qualified physician, regularly trained medical staff or a naturopath recognized under the Alternative Medical Practitioners Act.
- The personnel must have successfully completed at least the basic training of Med-Tronik GmbH or a certified partner.
- The personnel must have read and understood the chapter on safety as well as the warning notices contained in this instruction manual.

5.4 Cleaning of device and accessories

Basics

During testing, a tested person excretes substances through the skin (sweat) that may get deposited on the electrodes. The next person would then be tested with his predecessor's auto-toxins. Furthermore, the conductivity of the electrode would be diminished when covered with such a coating. Hence, it is important to clean the electrodes after every person tested.

Housing

Clean by wiping with a damp, lint-free cloth. No detergents or abrasive cleaners should be used. Disinfection spray can be used (e.g. Meliseptol).

Hand- and foot-electrodes

After or before each measurement the hand- and foot-electrodes should be cleaned using 70% alcohol or with disinfection spray (e.g. Meliseptol), using a clean lint-free cloth.

Screen

The screen can be cleaned with antistatic screen cleaner, available in most media centers. Do not use detergents and glass cleaner.

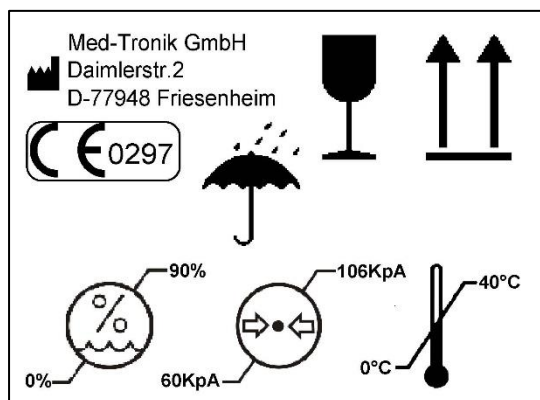
Low Pressure Electrodes

The rough side of a commercial household sponge or a small brush for slots and grooves offer a very good cleaning ability after which disinfection wipes may be used. Please apply this approach only to the low-pressure electrodes and not to the sensitive gold-plated foot-electrodes.

5.5 Packaging and transportation conditions

Check equipment and packaging for damages. In the event of transportation damages, please inform Med-Tronik GmbH or a distributor agent of Med-Tronik GmbH immediately.

Due to temperature differentials during the transport process, it is recommended to unpack and acclimatize the device for at least 3 hours in a dry room at room temperature. Should notable changes to the device due to heat or humidity be evident, the device should not be used and should be returned to the manufacturer for exchange.

**Transportation conditions:**

Handle with care
 fragile packet with one side up
 Keep dry
 Relative humidity: 0% – 90%
 Air pressure: 60kPa – 106kPa
 Temperature: 0°C – 40°C

Please keep the original package, in case service should be necessary.

5.6 Environmental conditions

MORA®-Nova may only be stored and operated in areas protected from dust, humidity, spray- and dripping water. The device must not be used in damp rooms (Definition acc. to VDE 0100).

Temperature: 0°C – 40°C
 Relative humidity: 0% – 90%
 Air pressure: 60kPa – 106kPa

Operating temperatures and relative humidity are defined by DIN EN 60204-1, for homes, office spaces and schools (17 – 26°C room temperature).

5.7 Functional check and maintenance of the device

The manufacturer has already conducted a functional check prior to initial operation that is reported in the medical device booklet included in the delivery.

The operator must ensure regular security- and functional checks conducted by a Med-Tronik service employee or a certified specialist for inspection. A test instruction can be requested from the manufacturer by certified specialists for inspection.

The procedure of a simple functional check is described in chapter 10.1 *Safety related checks*.

5.8 Warranty

The warranty period for the MORA®-Nova device, including electrodes, is 12 months (24 months within the EU) from the date of the invoice and includes construction, materials and execution errors – excluding wear and tear components – as well as electronic functions of the device, assuming normal operating conditions and appropriate maintenance.

Warranty is void if undue changes are made to the device, tampering or due to unauthorized repairs.

6 Controls

6.1 Front Panel



- 1 Touchscreen display (main operating panel)
- 2 Hand electrode storage
- 3 Measurement stylus storage
- 4 Standby button
- 5 Hand electrode connection jack (black)
- 6 Foot electrode connection jack (green)
- 7 Connection jack for additional accessories (yellow)
- 8 Foot console storage bay
- 9 Connection jacks for additional accessories (blue)
- 10 Measurement stylus connection jack (white)

6.2 Rear Panel



- 11 Fan outlet (**do not obstruct!**)
- 12 On/off switch (main switch)
- 13 Power supply socket
- 14 Type label

7 Accessories

7.1 Scope of delivery of basic equipment

Item No:	Description:
NET03003	Power cord, 2,5m; Type B
ELE05005	Electrode, foot console, green, ODU
KAB06002	Cable, 2,5m, ODU green-green (feet)
ELE04011	Electrode, hand, black, ODU
ELE04010	Electrode, hand, red, ODU
KAB06011	Cable, 2,5m, ODU black-black/red (hand)
GAY20005	User manual MORA®-Nova, English
GRI01005	Measurement stylus

7.2 Additional accessories

Measurement tips

MES01001	Measurement tip, low-pressure
MES01006	Measurement tip, ball, 3mm
MES01011	Measurement tip, EAV

Other accessories and consumables

KAB06004	Cable, 2.5m, ODU blue - black / red, MC
KAB06013	Cable, 2.5m, ODU yellow – black / red, MC
ZUB01023	Touch pen, white
ZUB01024	Touch pen, black
KOF20003	Travelling case (trolley) for MORA [®] -Nova

8 Operation of MORA[®]-Nova

8.1 Initial Setup

In order to take the MORA[®]-Nova device into operation, flip open the display cover. The display can be fixed in three different optional positions.



Attention!

Incautious use of the monitor arm can lead to injuries by trapping of extremities.



Plug the power cord into the power supply socket (13). Turn on MORA[®]-Nova with the on/off switch (main switch) (12), that is also located on the rear panel. The device is now in standby mode. The blue lighting of button (4) is on, but dimmed.



Start MORA®-Nova by pressing the standby button (4). The knob will stay pushed down and the lighting gets bright. As soon as the main menu appears, the device is ready for use.

Turning MORA®-Nova off

Return to the main menu, if not there already.

Before pressing any button/switch, **please shut down the device properly by software**. This is achieved by pressing the touch-button labelled *Shut down* and confirming the action. The device will shut down, while the blue lighting of the front button (4) remains bright, with the knob still pressed.

By pressing the front button (4), the device is turned off and the blue lighting gets dimmed, but still on, now with the knob out. MORA®-Nova is now in standby mode, but still connected to power, and can be restarted at any time by pressing the standby button (4) again, similar to a TV set.

In order to disconnect it completely from power, turn MORA®-Nova off by pressing the main switch (12) on the rear side.



Attention!

It is mandatory to first shut down the device properly by software, in order to prevent damage to the device and avoid the loss of data.

8.1.1 The touchscreen



The touchscreen responds to pressure. You can press by using the whole surface of the fingertip (even with gloves), the fingernail or, ideally, the touch pen. We recommend the use of our touch pen.

ZUB01023: touch pen, white

ZUB01024: touch pen, black



Do not use pointed objects, or the tip of the measurement stylus, as they can scratch or destroy the touchscreen.

8.2 Connection options for accessories

Using MORA®-Nova is very easy.

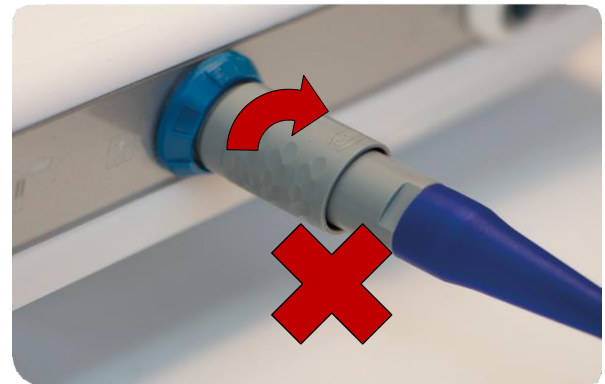
Connect the electrodes with the cables marked accordingly in color. You find detailed descriptions on the following pages.



When plugging in the plugs into the corresponding connection jacks, pay attention to the indentation matching the bump of the plug.



Grasp the plug at the cuff and simply pull it out. You will notice a "click".



Do not grasp the plug at the end cap or the cable and pull. Do not twist the plug.

Please note:

Damages on cables resulting from incorrect pulling out of the socket are excluded from warranty.

8.2.1 Connecting the hand electrodes



ELE04010: electrode, hand, red, ODU
 ELE04011: electrode, hand, black, ODU
 KAB06011: cable 2,5m, ODU, black-black/red (hand)

Connect the two gilded electrodes for the hands using the supplied connecting cable (black/black-red). Please note that the hand electrodes are provided with a colored ring. The one with the red ring is intended for the right hand and the one with the black ring for the left hand.

8.2.2 Connecting the foot electrodes



ELE05005: foot console

KAB06002: cable, 2,5m, ODU green-green (feet)

Connect the footplate with the connection line (green) to MORA[®]-Nova. Plug the cable with the green plug into the green connection socket. The footplate has two connections. These have identical functions and, depending on the installation location at the measurement site, enable optimal cable routing in order to minimize tripping hazards on the floor.

On the bottom side of the foot console there are small stanchions to unfold. That is why the foot console may be burdened with max. 25kg. Folded back, it can be stored in the storage compartment of the device.

8.2.3 Connecting the measurement stylus



GRI01005: measurement stylus, ODU with low-pressure electrode (v.2)

Connect the supplied measurement stylus to the corresponding white connection socket on MORA[®]-Nova.

For the measurement of terminal points in combination with hand or foot electrode that acts as a counter electrode.



The yellow and blue connectors allow further measurements in case it is not possible to use hand or foot electrodes (e.g. in case of amputations). Contact the manufacturer for information about special electrodes.

8.2.4 The difference between yellow and blue connection socket

MORA®-Nova includes a segment test. An automatic measurement process (determination of measured values) is carried out between the black, green and yellow connections. These connections each have two measurement channels that can measure the left and right side separately.



The two blue connections are not activated in this segment test and are intended for measurements with additional electrodes in the measurement module. These blue connections are also equipped with two measurement channels (bipolar), whereby the function on both blue sockets is identical. The connection sockets are always activated at the same time. However, the connections are separated from each other in order to have the option of connecting a single-channel (unipolar) electrode

to the first connection socket and another unipolar electrode to the second connection socket. This may be necessary, for example, if the cable is subjected to extreme stress and the cable/insulation cross-section is very large and a bipolar cable cannot be adapted to the small connector.

8.2.5 Measurement tips

The measurement tips are part of the measurement stylus and can be used for all measurements with the stylus.

Depending on measurement point, skin condition and the client's pain sensitivity, the appropriate measurement tip can be chosen. Therefore the tips can be unscrewed from the head of the stylus and be exchanged.



MES01006: measurement tip, ball, 3mm



MES01001: low-pressure measurement tip



MES01011: measurement tip, EAV

8.2.6 Function of the measurement stylus

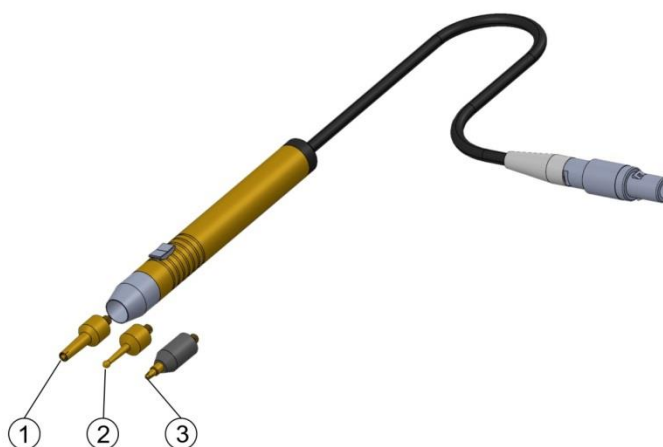
If a measurement is to be carried out at a specific point, it is necessary for the electrode to have only a small contact area. The measurement tip is responsible for contacting the electrode with the skin surface. In all cases, the shape of the measurement tip has a sufficiently large contact surface, but changes the measurement comfort.

The measurement stylus is also just an electrode with a control function, which is only used to control the connected MORA®-Nova and is electrically isolated from the measurement circuit. It is very convenient that control functions can be carried out via the measurement stylus in order to simplify the measurement process. With this option, the user does not have to constantly switch between the measurement device and the stylus, but can remain in the measurement position and control MORA®-Nova using the stylus control button.

8.2.7 Replacing a measurement tip

The measurement stylus of MORA®-Nova has the option of exchanging the measurement tip. Replacement is performed by normal unscrewing counterclockwise. You look directly at the measurement tip to be unscrewed.

The measurement tip is screwed in by turning the interchangeable tip clockwise. Make sure that you only screw on the measurement tip with your fingers and that it does not wobble after fixing it. A stop prevents the measurement tip from being screwed in too far.



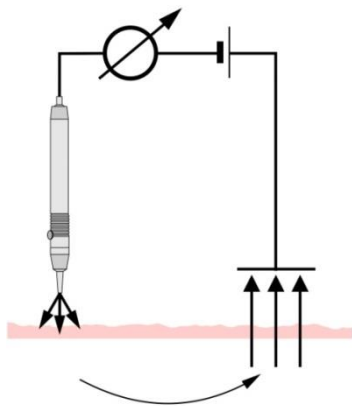
Measurement tips

8.2.8 Characteristics of the different measurement tips

1	Low-pressure measurement tip	Due to the tip shape, it is very suitable for beginners. Due to the exact imprint image, the print and the position can be easily recognized, see menu item <i>Performing the measurement</i> . This measurement tip has the largest contact surface and is found to be the "most comfortable" by persons tested, since novice users usually work with strong pressure on the skin surface.
2	Measurement tip, ball, 3mm	Due to the spherical shape, measurements are also possible at an angle with a constant area size. This measurement tip is often used when the tester shores up his own hand on the person tested, in order to avoid tension in his neck and shoulder after prolonged use. If this tip is pressed into the measurement point very often and with too much pressure, this can be perceived as

		uncomfortable.
3	EAV measurement tip	The slightly rounded and small measurement tip requires precise positioning of the measurement stylus at the measurement point, but can also be held at a slight angle. Since the tip also has additional insulation (the black plastic cuff), the measurement stylus can also be held at the very front without touching the measurement tip.

8.3 Basic information about resistance measurement



When measuring resistance, MORA®-Nova generates a small measurement voltage (see chapter Technical data) which is applied between 2 electrodes. As a result, a flow of electrons takes place between an electrode and the measurement tip of the measurement stylus during the measurement. The flow of electrons is so small that the person tested does not feel it and it is also limited by the device. Destruction of the measurement system, e.g. due to a short circuit, is not possible by design.

The amount of moving electrons is called the measurement current. This (very small) current is measured by MORA®-Nova and converted into a number that is displayed.

The intensity of the electron flow provides information about how well the (connective) tissue and nerves can transmit signals through the body. This flow of electrons is not unknown to the organism, because the body also controls muscles and organs using the smallest voltages and currents.

If a stream of electrons encounters an "obstacle" e.g. scarring, cartilage or an area with damaged tissue (e.g. due to injuries), the resistance is higher, because fewer electrons can pass. However, if the electron current encounters tissue with lots of electrons, the electrode current increases significantly. Hence, the resistance drops too. If there is no measurable obstacle in the electrons flow, this is called a short circuit. With MORA®-Nova this can only be achieved if the electrodes have direct (metal-to-metal) contact.

8.4 The software operation process

The measurements and the operation of the software are exemplified by measurements carried out at the so-called nail fold points.

8.4.1 Preparations

During the measurement, the subject sits relaxed in a chair, holding the hand electrodes in his/her hands as shown below.

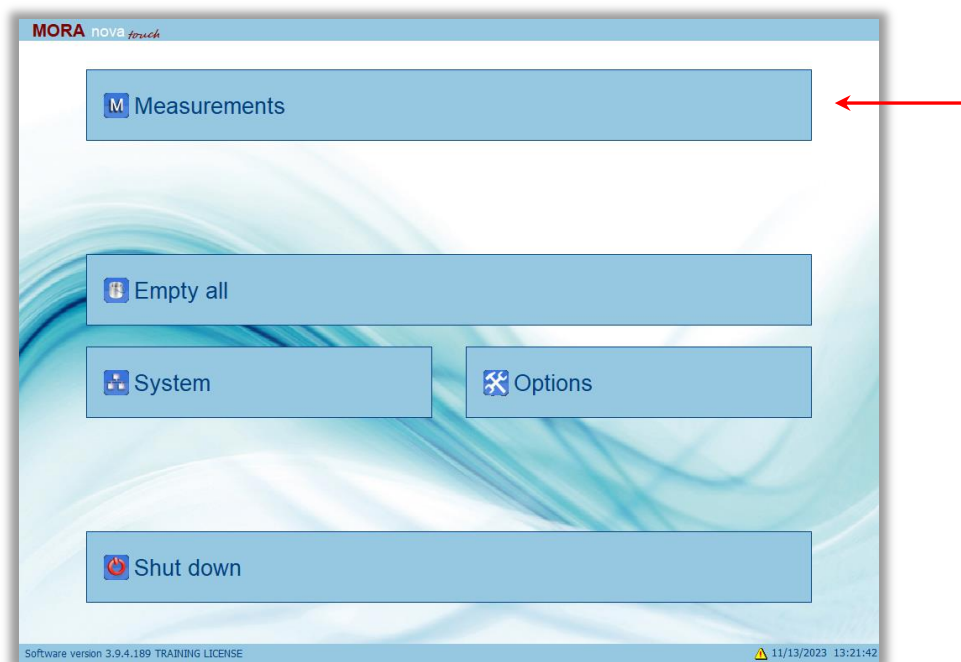


The bare feet are placed on the appropriate footplates. It is important to ensure that the feet are parallel and do not touch each other at unclothed parts (e.g. knee joints).



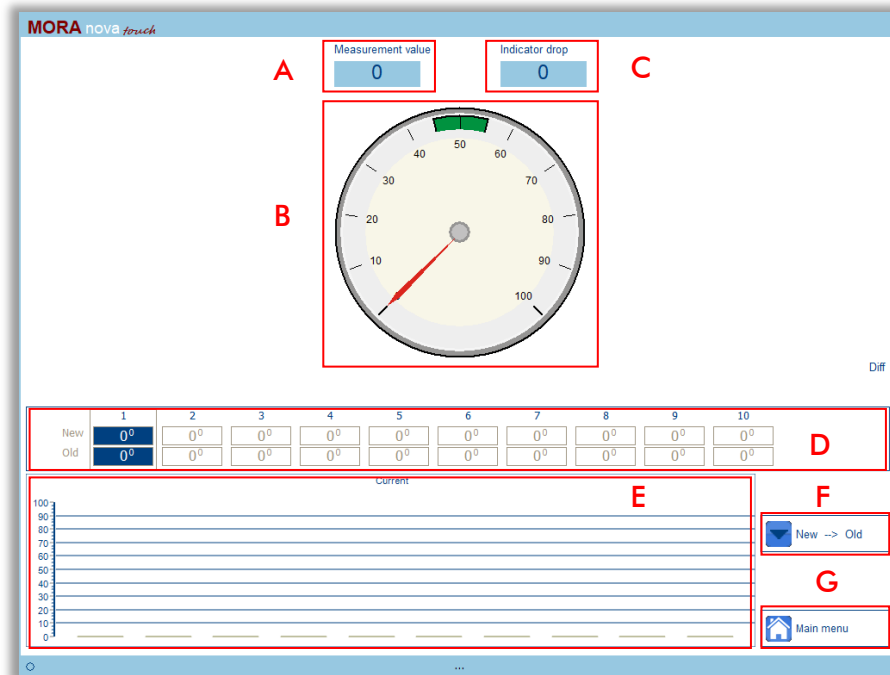
8.4.2 Starting a measurement

In order to start the measurement, press the corresponding button from the main menu of MORA[®]-Nova.



A measurement tone can be heard as soon as the measurement module is opened. MORA[®]-Nova initializes the measurement system and carries out a calibration process inside the device every time the module is opened, so that a measurement error or malfunction can be detected and almost completely ruled out.

8.4.3 Explanation of the screen layout



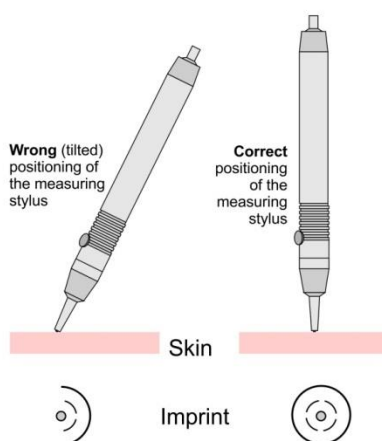
The measured values are displayed as a number (A) and as well on a dial gauge (B). Additionally, they are displayed as a bar graph (E). This enables a quick overview of conspicuously high or low measured values.

In the table (D) the current values are compared with former ones, acquired on the same measurement points. In the measured value table, always two numbers are shown for a measured value. The normal sized number shows the measured value itself, while the superscripted number shows the indicator drop, which is described in a following chapter.

In order to get the original value, it is not necessary to note it. By pressing the [New → Old] button (F), the current measured value is shifted down to the [OLD] area of the measured value table and the dial and bar graph are reset.

Now you can carry out the final measurement. It is not mandatory to remember the initial value, but practice has shown that this function is considered useful.

8.4.4 Handling of the measurement stylus



The test person is connected to the foot and hand electrodes. During the measurement the electrode is removed or the electrode is put down. Thus, the test person is still connected to 3 electrodes.

Now position the measurement stylus straight over the selected measurement point and gently slip the measurement tip perpendicularly over the skin surface. Slightly press further into the skin until the system takes a sample.

By applying an appropriate pressure, a small imprint on the skin will appear at the measurement point. This small imprint tells you whether you have placed the stylus correctly or not.

In the above graphic, the low-pressure electrode was used as measurement tip (good for beginners). The imprint at the measurement point shows an incomplete impression of the shape of the measurement tip due to the stylus being held askew. Repeat the measurement with the stylus attached correctly.

If you do not get a measurement value despite a slight increase in pressure, this can have two causes:

1. The surface of the skin is too dry (more common with elder people).
It helps to wash hands and feet with clear water before the test, as this allows some moisture to stick to the upper layer of the skin. This water does not adversely affect the measurement and has nothing to do with the hygiene of the test person.
2. The measurement point was not met correctly.
It takes a bit of practice to meet the measurement point right away. But you can easily find the point by simply moving (swiping) the tip of the probe over the area around the nail fold point. When the measurement point is touched by the measurement tip, the measured value will soar and the pitch of the measurement tone will also rise instantly, so you can keep your eyes on the measurement point because you will hear the change clearly. Now repeat the measurement exactly at the found point.

Finally, by pressing the measurement stylus button **(A)**, the measured value will be saved.

If a conspicuous measured value is discovered at a measurement point, a control or follow-up measurement can be carried out.

If you actually discover a malfunction, have the measurement stylus checked by the manufacturer or replaced if necessary. However, this still rules out any influence on the measured value.

8.4.5 The dial gauge, the measurement tone and the role of the indicator drop

The dial gauge **(B)** shows the measured value in the scale range from 0 to 100.

Additionally, a measurement tone is emitted depending on the measured value. This is helpful, because after the measured value has been determined and frozen, there may be further changes at the measurement point. This measured value change can also be logged and is referred to as an **indicator drop**.

The reason for a drop in the indicator can be the discharge of an electrical potential at the measurement point. A simple example can make this clear.

Example of indicator drop

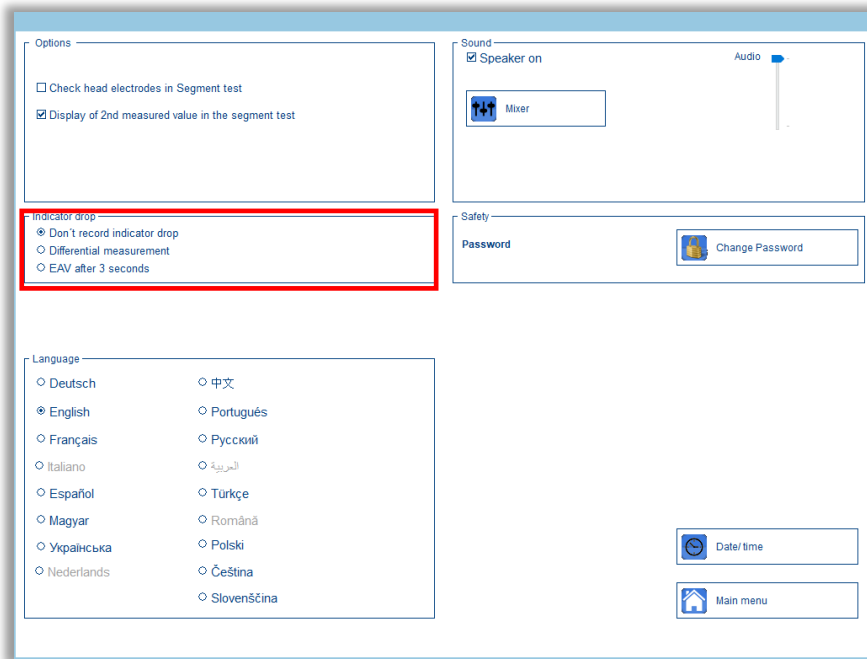
Measuring a battery with a battery tester, the meter will show a specific reading. This is the so-called *open circuit voltage*. Depending on the battery type (e.g. lithium-ion or lithium-polymer (LiPo) batteries), the measured voltage can even be identical to that of a new battery - even with an almost spent battery.

The reason for this "high" reading is that the meter itself is no electrical load for the battery.

With an attached load, e.g. a small lightbulb, the lightbulb may flash briefly and then likely dim very quickly due to the drain on the battery.

Exactly this drop of brightness resembles the indicator drop of the measured value.

The extent of the indicator drop is displayed dynamically as a number during the measurement **(C)**. Whether and how the indicator drop should be determined can be set in the options screen of MORA®-Nova.



You can choose between 3 options:

1. No indicator drop determination

Here, the measurement is stopped after determining the measured value.

2. Differential measurement

Here, repeated measurements are carried out until the measured value reaches a stable value (a so-called plateau). There is no time limit here. However, make sure not to change the pressure of the measurement tip upon the skin surface.

3. EAV after 3 seconds

As the name suggests, a second measurement is carried out exactly 3 seconds after the determination of the resistance. This specification is used as a standard among users.

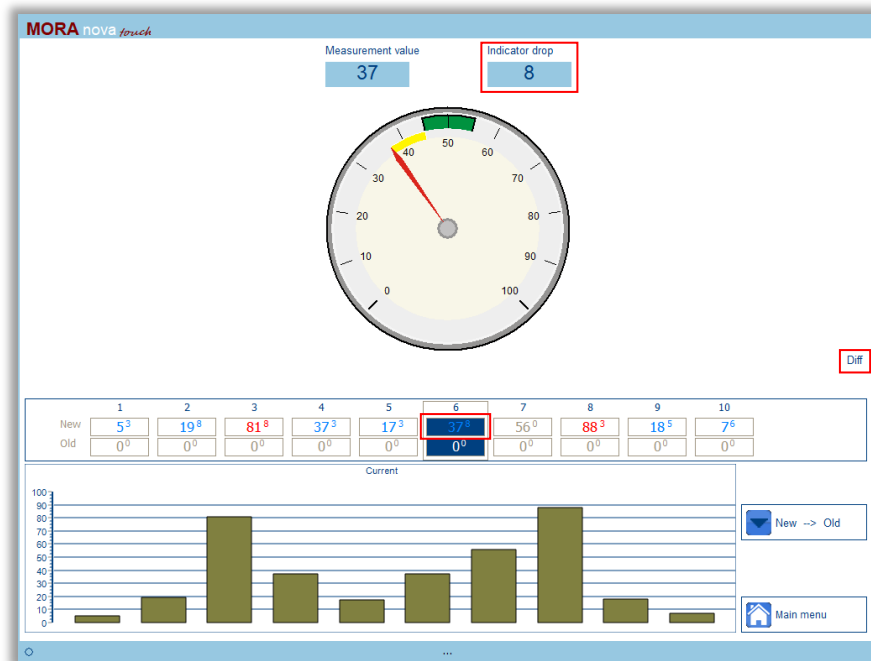
Next to the dial gauge, the type of indicator drop determination is also displayed during runtime (see figure: Indicator drop display).

Depending on the type of indicator drop determination, the following is displayed:

1. --- = no indicator drop detection
2. Diff = indicator drop determination according to the differential measurement technique
3. EAV = indicator drop determination after 3 seconds

Note that: if an indicator drop determination is activated in the options setup (selection 2 or 3), the measurement is only completed after a 2nd beep during the measurement. So you have to wait until two readings are taken, even if the indicator drop has a value of 0.

The dial gauge also shows the drop of the indicator graphically. In the example, after determining the currently measured value of 37 scale divisions, an indicator drop of 8 scale divisions was recorded. In the dial, the indicator drop area is marked yellow. The determination of the indicator drop was carried out according to the differential measuring technique (Diff) as shown in the figure.



Indicator drop display

8.4.6 Abortion of a measurement

Any measurement can be aborted simply by lifting the measurement stylus from the skin. MORA[®]-Nova recognizes this and resets the measured values. You can therefore repeat a measurement as often as you like without any problems and without having to press any additional keys.

8.4.7 End of a measurement

After all measurement points have been determined, you can switch between the fields on the screen and display the measurement results.

The measurement results can now be documented.

By tapping button [Main menu] (G), the main menu is displayed.

8.4.8 Documentation aids

The coloring in the display also helps you with the evaluation. All measured values that are above the mark 60 are colored red, whereas all values below the mark 40 are colored blue.

The range between 40 and 60 is a range for the mean values. The definition of this range is based on many hundreds of thousands of measurements taken worldwide over the last 40 years, but does not necessarily represent the "optimal values".

If the person being tested has generally low or high resistance values, this is not necessarily to be regarded as conspicuous, since

- skin texture
- age
- mineral balance
- fluid balance
- gender
- professional activity (changes to the skin surface e.g. cornea)

can influence the level of the measured values and therefore an individual mean value must be assumed for the test person.

But here, too, noticeable high or low readings can be seen. The evaluation of the level and the deviations depends on the experience of the user and is not evaluated by MORA[®]-Nova.

8.4.9 Menu item [Shut down]

MORA[®]-Nova is shut down by tapping [Shut down]. Please note that MORA[®]-Nova now enters a standby mode. In order to increase its service life, the device should therefore be completely disconnected from power with the main switch on the rear side of the device.

9 Known issues and solutions

The following errors may appear:

Error	Cause/Solution
Main menu is empty and no module is displayed.	There is no connection between the software and the measurement system. Please shut MORA [®] -Nova down and restart after about 10 sec. If the error persists, please contact our customer support.

10 Technical data

Device dimensions:	Width = 470 mm Height = 147 mm Depth = 425 mm
Device weight:	approx. 9 kg
Supply voltage:	Mains operation 110-240V / 50-60 Hz, 700 - 300 mA
Buffer battery:	Lithium battery BR2032
Classification:	Class IIa Type BF
Measurement range:	< 820 Ω ...4.7 M Ω
Measurement accuracy:	Measured value: ±1 scale unit
Graduation (Measurement):	0 ... 100
Max. measurement current:	< 25μA DC
Max. measurement voltage:	< 1,25V DC
Number of channels:	2
Environment requirements	
Relative humidity:	0% – 90%
Air pressure:	60kPa – 106kPa
Temperature:	0°C – 40°C

10.1 Safety related checks

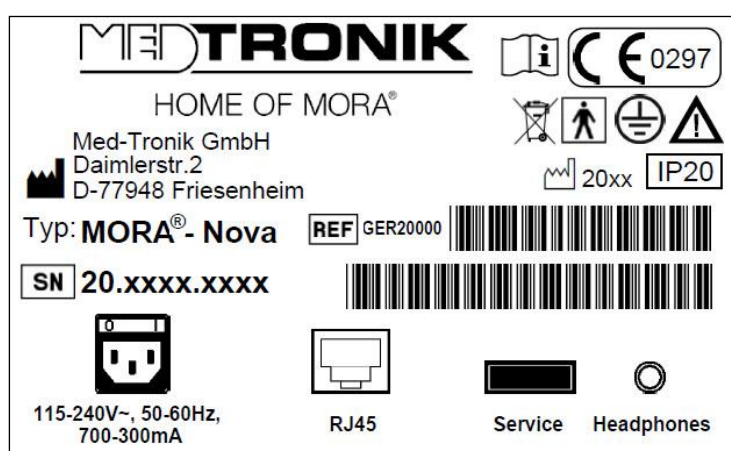
- Intervals: every 24 months
It is the sole responsibility of the user to observe these time limits!
- Scope:
- Visual inspection: housing, cables, movable components, control lamps, labels, instruction manual, and device manual
 - Check-up of functional capability
 - Check-up of electrical safety, DIN EN 62353

The device is a self-calibrating device. Should calibration anomalies become evident, the device must be sent back to the manufacturer or an approved agent with trained personal for verification. A simple control of function can check device calibration using the following method:

- Correctly connect hand electrodes and foot console.
- Place the left-hand electrode on the left foot plate.
- Place the right-hand electrode on the right foot plate.
- Start a segment test.
- Lightly press the hand electrode on the foot plates.

The measurement results of the connected electrodes must show a value of 100. If a lower value is displayed, the device including the used accessories must be sent in for calibration.



11 Type label



Type label, rear panel of MORA®-Nova

11.1 Explanation of applied pictograms / symbols

11.1.1 Information on type plate

-  Read the operation manual
-  Protection category I



Application part type BF



Manufacturer



Year of manufacturing



Electronic scrap must not be disposed of in household waste, but must be delivered to a collection point or returned to the manufacturer



CE-mark with number of the Notified Body



CE-mark



Serial number



Reference number / article number



2: Protected against solid foreign particles with a diameter of 12.5mm and more / protected against intrusion of one finger.

0: No protection against water

11.1.2 Symbols on packaging sticker



Handle with care, fragile



This side up



Keep dry



Tolerable maximal and minimal temperatures for storage and delivery



Tolerable maximal and minimal values of air pressure for storage and delivery



Tolerable maximal and minimal values of air humidity for storage and delivery

12 Disposal of devices

The device must be disposed of properly according to RoHS-guideline.

For the appropriate disposal, the device must be sent to the manufacturer or taken to a disposal facility for used electronic devices.

13 Guidance for electromagnetic compliance

Guidance and manufacturer's declaration on electromagnetic emissions		
The model MORA®-Nova is intended for use in the electromagnetic environment specified below. The customer or the user of MORA®-Nova should assure that it is used in such an environment.		
Emission Test	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	MORA®-Nova uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	MORA®-Nova is suitable for use in all establishments, including establishments directly connected to the public low-voltage power supply network that supplies buildings.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	



Warning:


This device/system must only be used by medical professionals.

This device/system can cause radio interferences or can disturb the operation of devices located nearby. Corrective actions might be necessary, for example a new orientation, a new arrangement of the MORA®-Nova, or the shielding.

Guidance and manufacturer's declaration on electromagnetic immunity			
MORA®-Nova is intended for use in the electromagnetic environment specified below. The customer or user of MORA®-Nova should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic Environment-guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative

			humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be in accordance with a typical commercial or hospital environment.
Surge acc. to IEC 61000-4-5	±1 kV differential mode (symmetric)	±1 kV differential mode (symmetric)	Mains power quality should be in accordance with a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s	Mains power quality should be in accordance with a typical commercial or hospital environment. If MORA®-Nova is operated also in case of power supply disruption, it is recommended to supply MORA®-Nova by an uninterruptable supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Magnetic fields on mains frequency should be in accordance with typical values found in commercial- and hospital environments.
NOTE - U_T is the AC mains voltage prior to application of the test level			

Guidance and manufacturer's declaration on electromagnetic interference immunity			
MORA®-Nova is intended for use in the electromagnetic environment specified below. The customer or user of MORA®-Nova should ensure the use in such an electromagnetic environment.			
Immunity test	IEC 60601-test-level	Compliance level	Electromagnetic environment guidelines
			Portable and mobile RF communications equipment should be used no closer to any part of MORA®-Nova including cables, than the recommended safety distance calculated from the equation applicable to the frequency of the transmitter.

<p>Conducted RF IEC 61000-4-6</p>	<p>$3 V_{\text{eff}}$ 150 kHz to 80 MHz</p>	<p>$3 V_{\text{eff}}$</p>	<p>Recommended safety distance $d = [3,5/3]\sqrt{P} = 1,2\sqrt{P}$</p>
<p>Radiated RF IEC 61000-4-3</p>	<p>$3 V/m$ 80 MHz to 2,5 GHz</p>	<p>$3V/m$</p>	<p>$d = [3,5/3]\sqrt{P} = 1,2\sqrt{P}$ for 80 MHz up to 800 MHz</p> <p>$d = [7,0/3]\sqrt{P} = 2,33\sqrt{P}$ for 800 MHz up to 2,5 GHz</p>
<p>with P being the actual power output of the transmitter in watts (W) according to the transmitter manufacturer's specifications and d as the recommended safety distance in meters (m).</p>			
<p>The field strength from stationary RF transmitter, as determined by an electromagnetic site survey, should be less than the compliance level in all frequencies.</p>			
<p>Interference may occur in the vicinity of equipment marked with following symbol.</p>			
			

Note 1 - at 80 MHz and 800 MHz, the higher frequency range applies.

Note 2 - these guidelines may not apply in all cases. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and persons.

- a Theoretically the field strength from stationary transmitters, e.g. base stations for wireless phones, mobiles, land transmitters, ham radio stations, AM- FM radio-and TV transmitters cannot be predetermined exactly.
In order to determine the electromagnetic environment with respect to stationary transmitters, a site survey should be considered. If the measured field strength on site where the device is being used exceeds the applicable RF compliance level above, the device should be monitored to verify intended operation. If performance characteristics out of the ordinary are observed, additional measures may be necessary, such as modification or relocation of the device.
- b Above the frequency range of 150 kHz to 80 MHz, the field strength should be less than 3 V/m.

Recommended safety distances between portable and mobile devices
RF communication equipment and MORA®-Nova

MORA®-Nova is intended for use in an electromagnetic environment as specified below. The customer or user of MORA®-Nova can help prevent electromagnetic interference by maintaining the minimum distance between portable and mobile RF communication equipment (transmitters) and MORA®-Nova, subject to the communication equipment's output power as recommended below.

Actual power output of transmitter W	Safety distance depending on transmission frequency m		
	150 kHz to 80 MHz $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2,33 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,74
1	1,20	1,20	2,33
10	3,79	3,79	7,40
100	12,00	12,00	23,30

For the output power of transmitters not indicated in above table, the distance d in meters (m) can be determined using the equation affiliated to the respective column, where P is the actual power output in watts (W) in compliance with the transmitter manufacturer's specification.

Note 1:
An additional factor of 10/3 was used for calculating the recommended safety distance for transmitters in the frequency range from 80 MHz to 2.5 GHz to alleviate the probability that any mobile/portable communication equipment introduced unintentionally to the client area results in interference.

Note 2:
These guidelines may not apply in all situations. Propagation of electromagnetic quantities is affected by absorption and reflection from structures, objects, and persons.

14 Manufacturer's address

Med-Tronik GmbH
Daimlerstr. 2
77948 Friesenheim
Germany

Phone: +49 (7821) 63 33-0
Fax: +49 (7821) 63 33-50
E-Mail: info@med-tronik.de
Web: www.med-tronik.de