STATIC CHECK
STC MIKA

Documentation STATIC CHECK STC MIKA

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Foreword

Manufacturer's information for the user

Dear user,

By choosing to use this STATIC CHECK STC MIKA measurement device, you have made a decision that demonstrates forward thinking.

INTEC devices are state-of-the-art in their technology, functionality and effect, and meet all fundamental safety requirements as demanded by EC directives.

Information for the operator

As the operator, you are responsible for adhering to all safety instructions and for the appropriate usage of this device.

Ensure that each user is competent in the use of this device and is able to operate the device without any danger.

Only use devices that are in perfect working order.

Directives, laws, standards

The contents and instructions of the following directives and regulations were observed in the design and construction of this device:

- 2006/95/EC Low-voltage directive
- 2004/108/EC EMC directive
- EN 50177

Warranty provisions

The applicable warranty provisions are laid out in the terms of delivery.

STATIC CHECK STC MIKA devices undergo stringent quality control checks.
However, should they malfunction in daily usage in spite of this, we provide a warranty of 24 months. (Only valid with invoice.)

- Defects in production or materials will be rectified by us free of charge, provided that the device is returned to us with no third-party modifications and has not been opened.
- Damage from collisions or improper usage is excluded from the warranty.
- Undertaking repairs yourself will void the warranty entirely.
- If malfunctions occur after the warranty has expired, our in-house support service will repair your device at the lowest price possible.

Scope of delivery / packaging / transport

Check the delivery to ensure that all components related to your order are present and undamaged.

The scope of delivery encompasses:

Standard:
- STC MIKA measurement device **(1)**
- kV probe **(2)**
- Earth measurement probe **(3)**
- RS-232 data cable **(4)**
- USB flash drive **(5)**
- RS232/USB adapter **(6)**
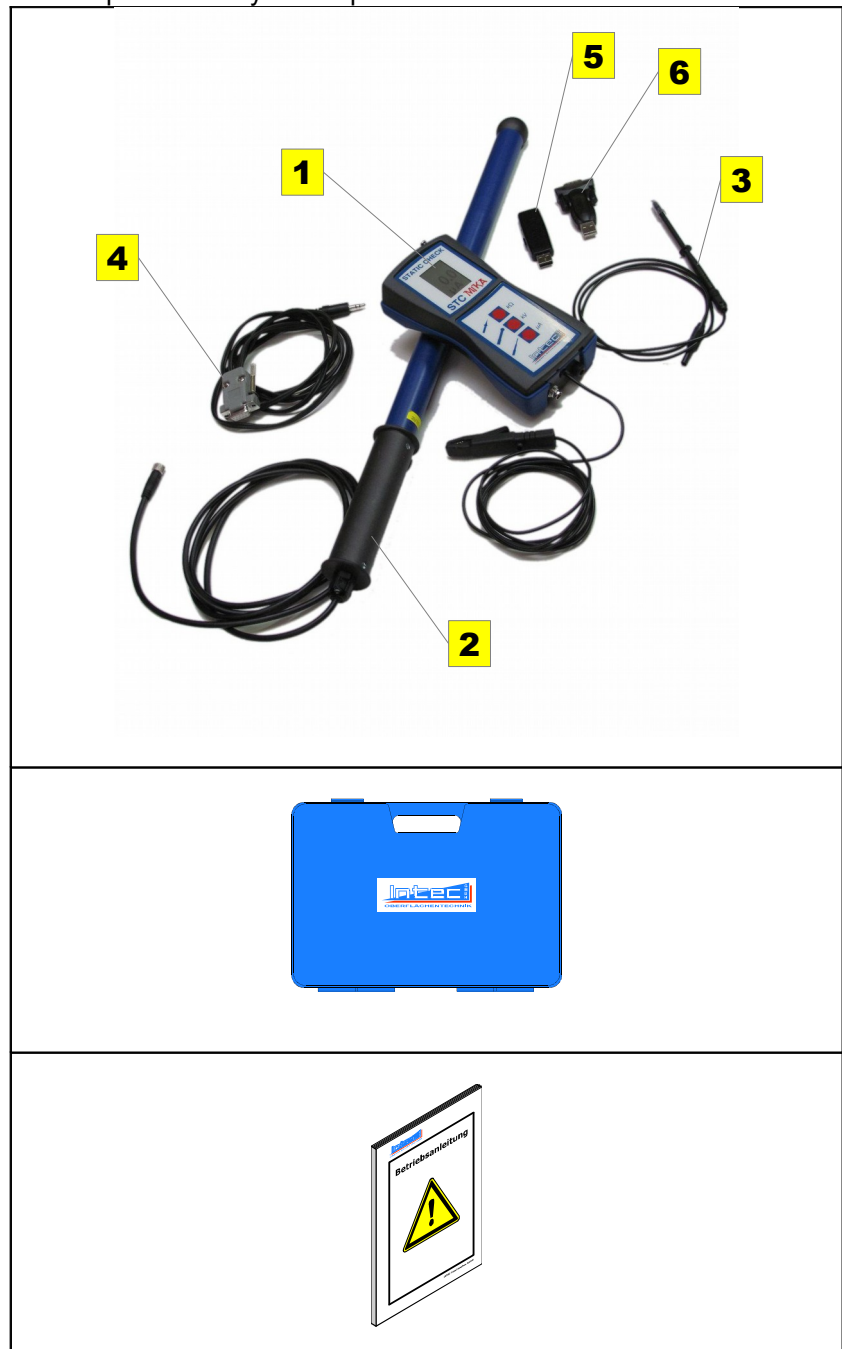
- Device case

- Operating manual
- Calibration certificate

General safety information

Information on dangers

There is no danger for the user if the device is operated appropriately and in accordance with its purpose.

However, improper usage of the device may result in injury.

Safety information in this manual

Safety information in this manual is indicated as follows:

DANGER:

This symbol indicates that there is a particular risk to persons.

(Risk of death or injury)

WARNING:

This symbol indicates that there is a particular risk for the device.

NOTE:

This symbol does not indicate safety information, but rather information aimed at providing a better understanding of the functions.

Operating personnel qualifications

Users of the STATIC CHECK STC MIKA device must be briefed on the particularities of the device for users and on the operation of the device.

The operator of the device must give users access to the operating manual and be sure that each user has read and understood the manual.

Emissions

There are no emissions in the form of dust or vibrations.

Product description

Appropriate usage

The STATIC CHECK STC MIKA device is designed to check electrostatic powder coating systems.

This device is not designed for other purposes, and using the device for other purposes is considered improper usage!
Please note in particular that this measurement device is solely designed for use on limited-current high-voltage generators (electrostatically charged).

A further part of appropriate usage is the reading of this operating manual and compliance with all instructions contained within – particularly safety instructions.

It also encompasses the timely performance of calibration processes at the prescribed intervals.

Failure to use the STATIC CHECK STC MIKA device appropriately in accordance with the above means that safe operation of the device cannot be guaranteed.

Any injuries or damage to property arising as a result of improper usage is the responsibility of the user of the measurement device and not of the manufacturer!

All of the usage specifications specified below should be considered to be usage recommendations, which have been presented to the best knowledge of the author in accordance with the current level of technical knowledge.

We hope that you enjoy working with the device successfully.

Construction

Overall view

Standard model:

(1) STC MIKA measurement device

(2) kV probe

(3) Earth measurement probe

(4) RS-232 data cable

(5) USB flash drive

(6) USB/RS232 adapter

Device view

(7) LCD visual display

(8) Antenna for current measurement

(9) Earth clip

(10) Connector for kV probe

(11) Socket for earth measurement probe

(12) Socket for RS232 interface

(13) Earth test button (kΩ)

(14) High voltage test button (kV)

(15) Spray current test button (µA)

Rear side of device

(16) Battery compartment cover (conductive)

(17) Fixture screw (short)

(18) Fixture screw (long)

(19) Type label

Functional description

The quality of a surface coating is critically dependent on coating parameters being adhered to and constantly checked.

The STATIC CHECK STC MIKA measurement device provides the user with a simple means to check those magnitudes that are of such critical importance to production.

It allows both single-gun and multi-gun systems to be tested rapidly, safely and simply to check whether all of the spray guns are providing the correct high voltage. Particularly after any maintenance or repair work, it is important that the guns be checked to ensure that they are providing high voltages, thereby preventing defective coatings.

The device is also capable of measuring powder spray current in µA. This enables the coating powder for Tribo powder spray systems to be checked for their suitability for use with Tribo guns.

Furthermore, a special device makes the third function of the STATIC CHECK STC MIKA:possible. The workpieces to be coated can now be tested for their resistance to earth prior to feeding them into the spray booth. (as per EN 50177 the resistance to earth must not be larger than 1 MΩ.)

The 64x102 pixel visual display allows the measured values to be displayed clearly and in an internationally understandable format.

The µP logic unit now makes it possible to very simply save each of the measurement values for reading from a PC later via the RS-232 interface and processing or documenting them.

The measurement device is supplied as standard with a case, high-voltage probe, measurement and data cables and a USB flash drive containing PC software and drivers. A USB/RS-232 converter is supplied for use with PCs that do not have a COM interface.

It is recommended that this measurement device be sent back once a year for recalibration.

By providing you with the STATIC CHECK STC MIKA, we are providing you with a practical, easy-to-use, light, portable and inexpensive measuring instrument for optimising your system.

Technical specifications

Dimensions and weights		
	Measurement device	**kV probe**
Length	170 mm	530 mm
Width	82 mm	Ø 30 mm
Height	38 mm	
Weight	353 g	460 g
Measurement data		
Display:	LCD visual display with 64x102 resolution and automatic display of decimal points, units, polarity and battery change	
Measurement range:		
Voltage measurement:	-120…+120 kV	
Current measurement:	-99,9…+99,9 µA	
Earth measurement:	Display "good" ☺:	0…800 kΩ
	Display "average" ☺:	800 kΩ…1 MΩ
	Display "poor" ☹:	> 1 MΩ
Internal resistance of the kV measuring probe	20 GΩ	
Tolerance:	See calibration certificate	
Measurement speed:	3 measurements / sec	
Memory:	50 measurement values per measurement field	
Environmental conditions		
Operating temperature:	0…+40°C	
Storage temperature:	-10…+50°C	
Relative humidity:	Max. 80%	

Subject to technical modifications.

C E

Operation

Safety information

DANGER:

This measurement device is solely designed for use on limited-current high-voltage generators (electrostatically charged). Performing measurements on other high-voltage sources may cause loss of life!

Take precautionary measures when handling voltages of larger than 50 VDC or 25 VAC to avoid electric shock. According to DIN/VDE, these values represent the maximum voltages that can be touched. Prior to taking any measurement, ensure each time that the measurement cables are not damaged in any way.

WARNING:

To protect the device from damage, the measuring cables must always be disconnected from the measurement device before changing the measurement function.

Check before each measurement that the the system is correctly connected to earth by means of the earth clip (9).

The person operating the device should always be sufficiently grounded in order to avoid unpleasant and painful electrical discharges.

For this reason, the measurement device must always be firmly held with bare hands so that the rear conductive battery cover (16) is being touched, thereby safely grounding the person operating the device.

Information on operation

	NOTE:
ℹ	**The numbers shown in brackets in the operating instructions refer to the individual elements and positions in the section "Construction" in the chapter "Product description".**

Measurement of high voltages with electrostatic guns

	DANGER:
⚠	**Cut the supply of powder or paint in order to prevent an explosive atmosphere from developing.** **Failure to do so may allow sparks to ignite a fire that could cause loss of life!**

1.) Screw the connector of the kV probe (2) firmly into the socket (10).

2.) Grip the measurement device (1) completely with one hand, touching the rear conductive battery cover (16) in the process.

3.) Hold the black conductive handle of the kV probe (2) in the other hand.

4.) Switch on the spray gun or have it switched on by an assistant.

5.) Press and release the kV test button (14).

☞ The display (7) will switch on for 20 seconds.

6.) During this time, hold the kV probe (2) with the spherical measuring head directly against the high-voltage source (spray jet electrode).

☞ The high-voltage value in kV and the polarity will be displayed directly on the LCD display (7).

NOTE:

As the kV probe (2) has been designed to have very high resistance (20 GΩ), practically no current is lost during the high-voltage measurement.

With a no-load voltage of 100 kV, the high-voltage generator will therefore only lose 5 µA.

Most spray guns supply a maximum voltage of 70...100 kV. As voltages of this magnitude will render the air surrounding the high-voltage electrode conductive, part of the voltage will be conducted through the air.

For this reason, the voltage measured will always be a little below the actual voltage present.

Measurement of currents with electrostatic guns

DANGER:

Cut the supply of powder or paint in order to prevent an explosive atmosphere.

Failure to do so may allow sparks to ignite a fire that could cause loss of life!

1.) Pull the antenna (8) out as far as it will go.

2.) Switch on the spray gun.

3.) Press and release the µA test button (15).

    ↳ The display (7) will switch on for 20 seconds.

4.) Slowly approach the high-voltage source (spray jet electrode) with the antenna from a distance of around 30 cm.

    ↳ The current value in µA and the polarity will be displayed directly on the LCD display (7).

NOTE:

If the gun is working correctly, the spray current should gradually increase until the short-circuit current has been reached (around 100 µA in most application devices).

Take note of any short-circuit deactivation circuit that may be present in the control electronics of the gun.

Measurement of currents with Tribo guns (testing charge capacity of Tribo powders)

1.) Pull the antenna (8) out as far as it will go.

2.) Switch on the spray gun and adjust the powder cloud as desired.

3.) Press and release the µA test button (15).

☞ The display (7) will switch on for 20 seconds.

4.) Hold the antenna (8) directly in the powder cloud exiting the jet nozzle of the spray gun.

☞ The current value in µA and the polarity will be displayed directly on the LCD display (7).

NOTE:

If a spray current of > 1.7 µA has been reached, the powder being tested is suitable for Tribo spraying.

Measurement of resistance to earth

DANGER:

Cut the supply of powder or paint in order to prevent an explosive atmosphere.

Failure to do so may allow sparks to ignite a fire that could cause loss of life!

WARNING:

In order to measure resistance to earth as per EN 50177, the earth measurement probe must have a high no-load voltage. This voltage is generated from the internal batteries and is not dangerous.

However, touching this probe when the test button is depressed (13) can be very unpleasant and should therefore be avoided.

1.) Connect earth measurement probe (3) to socket (11).

2.) Hold earth measurement probe (3) to the workpiece to be tested. Press lightly to ensure that the contact is secure.

3.) Press kΩ test button (13) and **hold down**.

4.) A smiley will appear on the LCD visual display (7) with a bar displaying the state of the resistance to earth.

NOTE:

If resistance to earth lies within the range 0...800 kΩ, it is well suited for coating.

If resistance to earth lies within the range 800...1000 kΩ, it is of limited suitability for coating.

If resistance to earth is >1000 kΩ, it not suitable for coating.

WARNING:

If the resistance to earth is >1000 kΩ, the workpiece must not enter the booth and must not be sprayed as per EN 50177!

Saving measurement values

General information

The STATIC CHECK STC MIKA measurement device has memory capable of storing **50 measurements** each of the values kV, µA and kΩ.

This makes it possible to, for example, measure each of the guns in a coating plant in sequence and store the measurement values in the device.
These measurement values can then be read and documented at a later point in time from a PC.

This makes the cumbersome act of having to write down each individual measurement while taking measurements in the powder booth unnecessary.

Procedure

1.) Perform each of the desired measurements (e.g. kV) as described above.

2.) To save the measurement value, press the corresponding test button three times within one second.

✏ The measurement value will then be saved on the device and referenced with a consecutive index number. This number will flash at the top left of the LCD display (7).

NOTE:

The index numbers are assigned automatically and increased by 1 with every value saved.

Deleting measurement values

The PC software is used to delete saved measurement values as described below.

PC software

Functions

The STATIC CHECK STC MIKA device is equipped with storage memory. It allows up to 50 measurement values to be stored for each measurement field (current, voltage and resistance), and these values can be read using the supplied software.
The measurement values are saved in a text file separated by semi-colons, which can be imported into common spreadsheet software or similar for processing and documentation.

The measurement values are transmitted by means of a serial RS-232 interface. If the PC does not have such an interface, the supplied USB/RS-232 adapter (6) can be used.

System requirements

Operating systems

Windows 2000
Windows XP
Windows Vista
Windows 7

Minimum system requirements

233 MHz processor (Recommended: Pentium 500 MHz or better)
32 MB RAM (Recommended: 128 MB RAM or more)
10 MB free hard drive space

Installing the software

1.) Insert the supplied USB flash drive (5) into one of the PC's free slots.

    ✎ The device driver will be installed automatically.
Wait until the device can be used.

2.) In Windows Explorer (accessible via Computer/My Computer), open the flash drive and enter the directory "STC MIKA\SOFT-WARE".

3.) Run the file "setup_STC1.0.0.exe".

    ✎ The start screen of the installation program will appear.

4.) Click on "Next>".
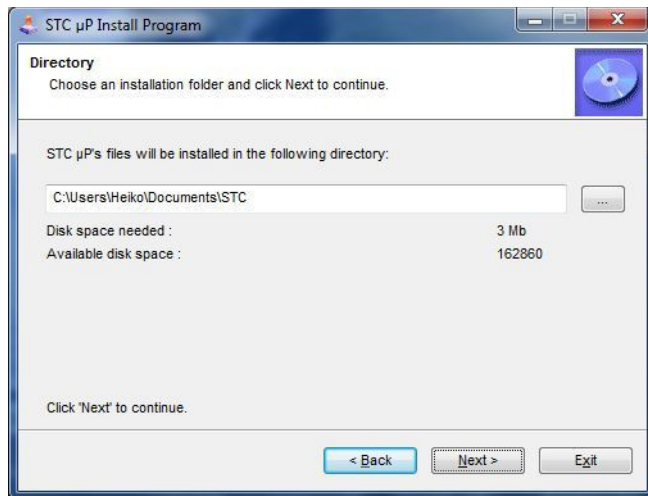
↳ Select the installation directory. The "My Documents" directory is selected by default.

NOTE:

Please only select a directory to which your user account has write access, because the measurement values read in later will be saved in this same directory.

The default OS program directory (e.g. "C:\Program Files") often does not give users write access and is therefore not recommended.
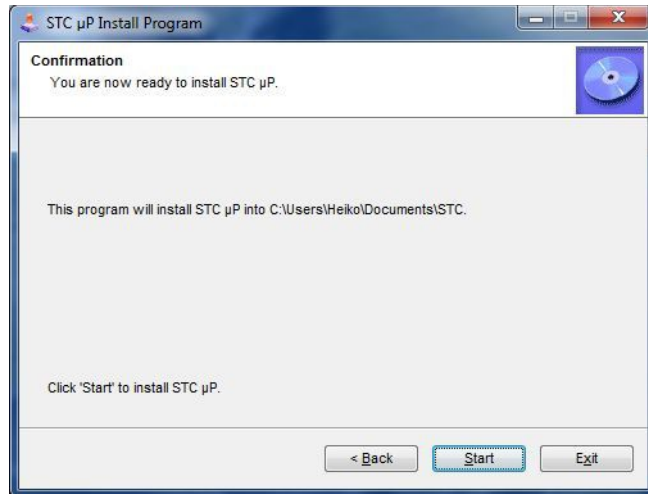

5.) Click on "Next>".

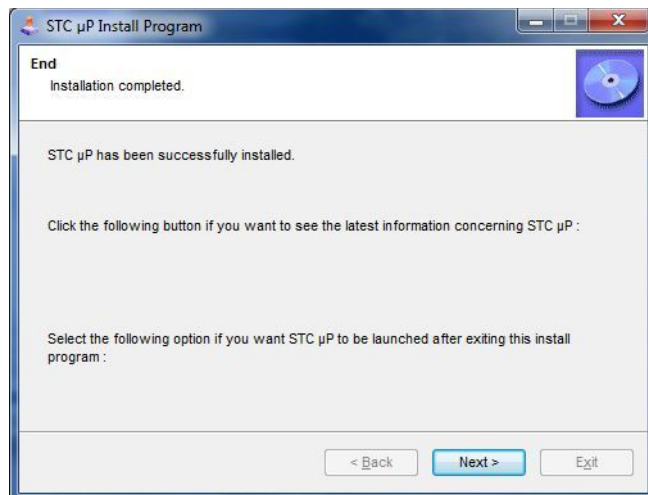↳ If the directory does not yet exist, the following message will appear:
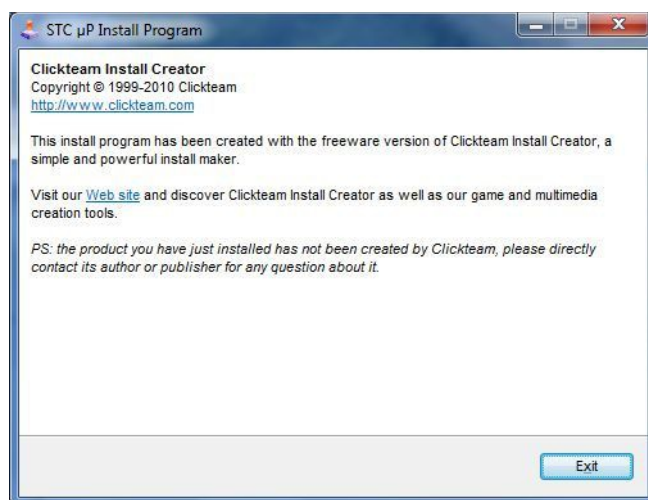

↳ Confirm with "Yes".

6.) Press "Start" to install the program.

7.) Once installation is complete, the following screen will appear:

8.) Click on "Next>".

9.) Confirm with "Exit".

NOTE:

The PC must be restarted before the program can be used.

A shortcut is placed automatically on the desktop so that the program can be launched quickly.
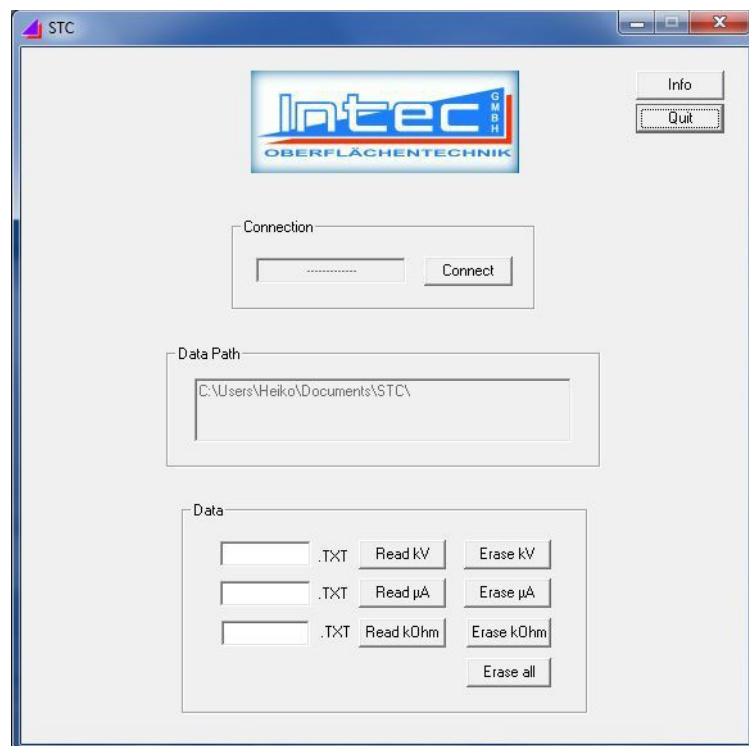

Using the program

Starting and connecting

1.) To start the program, double click on the corresponding shortcut on the desktop or open the directory specified during installation and run the file "STC.exe".

     ✎ The start screen of the installation program will appear.

2.) Connect the STATIC CHECK STC MIKA device to the PC with the RS232 data cable (4).

NOTE:

The COM Port address of the PC must be between 1 and 8. Higher addresses won't be detected by the program.

If the PC does not have an RS-232 interface, use the supplied USB/RS-232 adapter (6).

The relevant drivers used to install the adapter are located on the USB flash drive (5) in the directory "DIGITAL USB to RS232 converter".
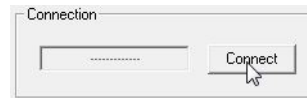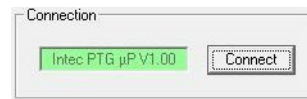
3.) Press the kV (14) **or** µA button (15) on the device.

    ✇ The visual display (7) will switch on.

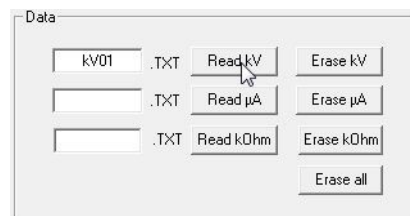**4.)** <u>Press the "Connect" button on the PC within 20 seconds</u>.

    ✇ All available COM ports will be checked to determine if a device has been connected.
Once connected, the device will appear in the window.

Reading the memory

1.) To extract values, e.g. kV measurement values, enter your desired filename and click on the relevant button (in this case "Read kV").

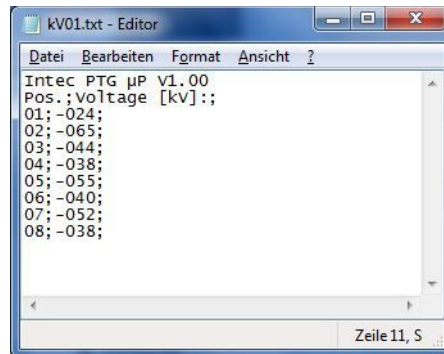   ✇ Once the transfer is complete, the following message will appear:

    ✇ The file specified above will have been written to the installation directory.

2.) This file can now be opened and processed further.

Example:

NOTE:

The procedure for reading the values from the other measure-ment fields (µA und kΩ) is along the same lines.

Deleting the memory for a specific measurement field

1.) To delete the data for a specific measurement field, e.g. kV, press the button "Erase kV".

↳ A confirmation will appear once the data has been deleted.

Deleting the device memory completely

1.) To erase the entire device memory, press the "Erase all" button.
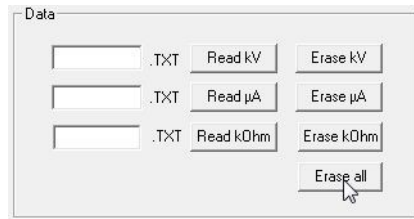
✎ A confirmation will appear once the data has been deleted.

Displaying the program version

1.) Press the "Info" button to display the program version.

✎ The current version will be displayed.

Ending the program

1.) To end the program, press the "Quit" button.

Help with errors

Overview table

Type of error	Cause of error / operating or maintenance error	Measures for rectifying the error
Device cannot be switched on.	Battery is empty.	Replace the battery (see chapter "Servicing").
	Device is defective.	Send device for inspection/repair to manufacturer.
Measurement values are unrealistic.	Battery is empty.	Replace the battery (see chapter "Servicing").
	Measurement probe or measurement head cannot make	Hold measurement probe or measurement head properly so
	Environmental conditions are outside of the tolerance range.	Remain within tolerance environmental conditions.
	Device is defective.	Send device for inspection/repair to manufacturer.
"LOBAT" appears on the LCD display (7).	Battery is empty.	Replace the battery (see chapter "Servicing").
The digital display varies when measuring current in electrostatic guns.	Short-circuit detection in the gun's electronics is active.	Move the µA measurement antenna (8) a little further away from the electrode.

Maintenance

Cleaning

WARNING:

As most of the measurement device's components are made of plastic, aggressive cleaning agents such as thinner or similar must never be used!

For this reason, avoid contact with liquid paint!

NOTE:

The STATIC CHECK STC MIKA measurement device should be cleaned after every use if it has come into contact with powder or paint.

Servicing

General information

The STATIC CHECK STC MIKA device generally does not require servicing.

It is recommended, however, that the device be sent to the manufacturer for recalibration once a year.

This ensures that the device continues to function properly and that the precision remains consistent.

Replacing the battery

When the battery warning message "LOBAT" appears, the batteries should be replaced in the near future. Failure to do so will have a considerably negative impact on the measurement precision.

The measurement device is powered by three 1.5 Volt AA batteries of type

IEC6 LR06. The battery compartment is located on the rear of the measurement device.

Open the battery cover (16) by releasing the two screws (17) and (18). Remove the used batteries from the battery clip, and insert the new batteries with the correct polarity into the battery compartment.
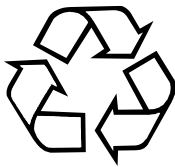
Close the battery cover (16) and tighten the two screws (17) and (18).

WARNING:

The lower screw (18) is longer than the upper one because it connects the conductive battery cover (16) with the mass of the device (earth).

Not earthing the cover can lead to voltage discharges!

Do not dispose of used batteries in the common household waste. Instead, bring the used batteries to special waste disposal facilities or collection points.

Repairs

WARNING:

Repairs must as a rule not be performed by the user.

A defective device may not be used any further and must be sent for inspection immediately to INTEC Maschinenbau GmbH.

Undertaking repairs yourself will void the warranty entirely (see warranty provisions).

Decommissioning

Temporary decommissioning

Once the measurement process is complete, the device will switch off automatically. With kV and µA measurements, the visual display will switch off after 20 seconds, while it will switch immediately after releasing the kΩ button (13) with earth measurements.

NOTE:

Ensure that the kΩ button (13) is not depressed during storage, as this will consume the battery very rapidly.

The measurement device should preferably be stored in the device case. This securely protects it against damage.

If the STATIC CHECK STC MIKA is not to be used for a longer period of time, the battery should be removed from the device so that serious damage as a result of battery leaks can be avoided.

Permanent decommissioning / disposal

ENVIRONMENTAL PROTECTION:

The STATIC CHECK STC MIKA measurement device is an electronic device and must be disposed of in an environmentally compatible manner in accordance with applicable provisions.

Additional information

Do you have any other questions, comments or requests? We will be glad to help.

Our company address is:

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You can contact our central customer support service at

Telephone:	**+49 (0)231 44 30 41**
Fax:	**+49 (0)231 45 86 21**
Email:	**office@intec-do.de**

This service will also be happy to assist you in finding the right specialist for your question. Visit us on the internet at:

http://www.intec-do.de