

Misa



Product Manual

8.950.8001EN / 2020-05-18



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1.1 Instrument description

1.2 Model versions

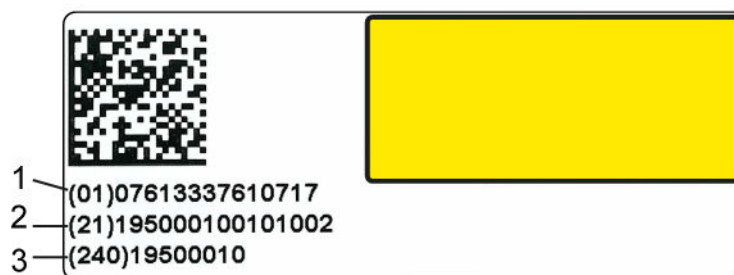
Table 1 Model versions

2.950.0010	Misa Basic	Laser class 1
	- With Misa Vial Holder - Other accessories (<i>see page 4</i>)	
2.950.0020	Misa Advanced	Laser class 1
	- With P-SERS Attachment - With Misa Vial Holder - With Calibration Standard - And other accessories (<i>see page 4</i>)	



NOTICE

The required numbers for the customer service can be found on the type plate (see example):



- | | | | |
|----------|---------------------------------------|----------|-----------------------------|
| 1 | (01) = External article number | 2 | (21) = Serial number |
| 3 | (240) = Metrohm article number | | |

1.3 Misa Cal software

In order to use Misa, one of the following software is needed:

Table 2 Model versions

6.6071.010	Misa Cal (desktop software)
6.6071.020	Misa Cal M (mobile app)

Misa Cal and Misa Cal M are preloaded on the accompanying USB stick (6.06071.050). The latest version of Misa Cal desktop software and firmware can be downloaded from the following link:

<https://www.metrohm.com/en-us/support-and-service/software-center/>

The Misa Cal M mobile app is available from Google Play™, search for **Misa Cal M**.

1.4 About the documentation



NOTICE

Please read through this documentation carefully before putting the product into operation.

The document contains important safety information and warnings which you must follow in order to ensure safe operation of the instrument. Metrohm is not responsible for damages and safety hazards that occur from using the instrument in a manner that is not specified in the user manual.

Symbols and conventions

The following icons and formatting may appear in this documentation:

1

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1.5 Additional Information

Refer to following software tutorials for more information:

- Misa Cal software tutorial (8.0105.8024)
- Misa Cal M mobile app tutorial (8.0105.8025)

1.5.1 Accessories

Up-to-date information on the scope of delivery and optional accessories for your product can be found on the Internet. You can download this information using the article number as follows:

Downloading the accessories list

- 1 Enter <https://www.metrohm.com/> into your Internet browser.
- 2 Enter the article number of the product (e.g. **2.1001.0010**) into the search field.

The search result is displayed.

- 3** Click on the product.

Detailed information regarding the product is shown on various tabs.

4

The PDF file with the accessories data is created.



NOTICE

When you receive your new product, we recommend downloading the accessories list from the Internet, printing it out and keeping it for reference purposes.



CAUTION

Health hazards or severe property damage

Warns of dangerous situations or unsafe actions that could result in moderate injuries or considerable property damage.

Lists measures to avoid hazard.

2.3 Warning symbols

Make sure that any additional hazard symbols are marked on the product for your operation of the product.

The following warning symbols in the documentation and at hazard areas of the product point out hazard potentials:



– Warning of a hazard area



NOTICE

Warning symbol on the product

If this warning symbol is on the product, read the respective documentation prior to installation and initial start-up.



– Warning of electric shock from electrical potential



– Warning of danger of fire and explosion from highly flammable substances and gases



– Warning of danger of poisoning and chemical burns from chemical hazardous substances



– Warning of danger of infection and poisoning from biological hazardous substances



– Warning of risk of injury from high temperatures



 – Warning of cut injuries from pieces of broken glass and/or sharp edges



 – Warning of risk of injury by laser radiation



 – Warning of dangerous optical radiation

2.4 Intended use

Metrohm products are used for the analysis and handling of chemicals and other materials.

Usage therefore requires the user to have basic knowledge and experience in handling chemicals. Knowledge with respect to the application of the fire prevention measures prescribed for laboratories is also mandatory. Be sure to take proper safety precautions when working with chemicals.

Adherence to this technical documentation and compliance with the maintenance specifications make up an important part of intended use.

Any utilization in excess of or deviating from the intended use is regarded as misuse.

Specifications regarding the operating values and limit values of individual products are contained in the "Technical specifications" section, if relevant.

Exceeding and/or not observing the mentioned limit values puts people and components at risk. The manufacturer assumes no liability for damage due to non-observance of these limit values.

The EU declaration of conformity loses its validity if modifications are carried out on the instruments and/or the components.

2.5 Residual risks

2.5.1 General dangers at the workplace

Generally, the regulations and provisions of the regulatory institutions and authorities in the field of work apply.

The instructions regarding the following areas have to be followed when using the products:

- Work safety
- Handling mechanical installations
- Handling electricity
- Handling hazardous and environmentally damaging substances
- Handling hazardous and environmentally damaging liquids

- Disposing hazardous and environmentally damaging substances

If they are not followed, this may result in:

- Disturbing, injuring and/or killing of people
- Malfunction and/or damage to instruments and infrastructure
- Damage and/or contamination of the environment



WARNING

General dangers at workplace

If the safety measures are not followed, working in a laboratory bears a high risk of injury, which can endanger life and health.

- Only professionally trained and qualified specialist personnel may operate the products.
- Follow the applicable provisions concerning work safety and all regulations on wearing protective clothing.
- Use suitable tools to perform your work.
- Check the fill level of waste bottles or waste canisters and analysis vessels, and make sure they do not overflow.
- Use protective grounding when working with highly flammable substances and gases.

2.5.2 Danger from electrical potential



WARNING

Electric shock from electrical potential

Risk of injury by touching live components or through moisture on live parts.

- Never open the housing of the instrument.
- Protect live parts (e.g. power supply unit, power cord, connection sockets) against moisture.
- If you suspect that moisture has gotten into the instrument, disconnect the instrument from the energy supply. Then notify Metrohm Service.
- Only personnel who have been issued Metrohm qualification may perform service and repair work on electrical and electronic components.
- The electrical safety of the instrument is ensured as part of the international standard IEC 61010.

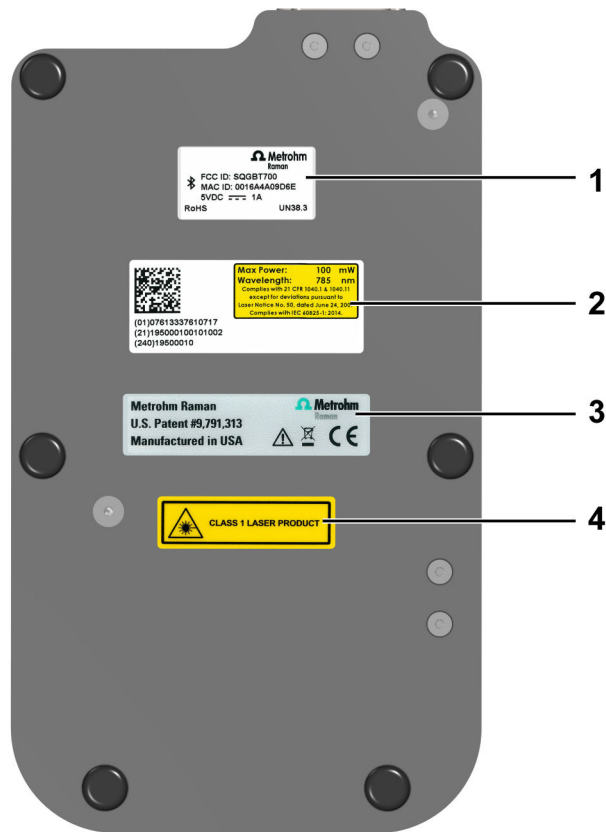


Figure 1 Misa – Rear

1	Bluetooth label	2	Laser specifications / article number and serial number
3	Type plate	4	Laser classification

Laser classification

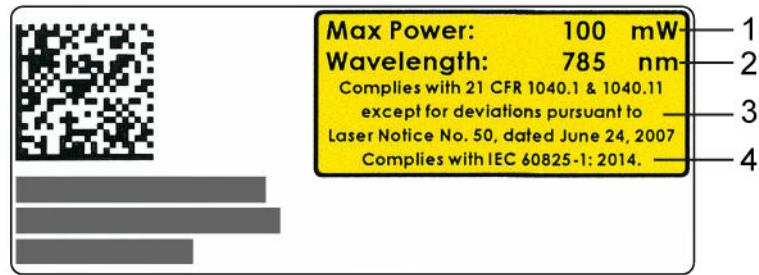
Misa corresponds to the following laser classification:



- Class 1 laser product

Laser specifications

The following specifications refer to the laser embedded in Misa:



1	Max Power: 100 mW	2	Wavelength: 785 nm
3	Complies with 21 CFR 1040.1 & 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007	4	Complies with IEC 60825-1:2014

2.6 Responsibility of the operator

- Eliminate defects or damage which impair operating safety without delay.
- Eliminate malfunctions which could impair safety without delay.
- The rules, regulations and instructions listed in the present document are not the only valid ones. Comply with the applicable statutory rules, government agency directives and regulations.
- Unauthorized modification of the products excludes any and all liability on the part of the manufacturer for any damage resulting from this as well as for any consequential damage. No modifications, attachments or conversions which could impair safety may be carried out on the products without the approval of the manufacturer.
- Spare parts must meet the technical requirements established by the manufacturer. Original spare parts always meet these requirements.
- Personnel must be familiar with this safety-relevant information and it must be available for consultation at all times.

2.7 Personnel requirement

Only qualified personnel may operate the present product.

Qualified personnel are people authorized by the safety responsible to carry out the necessary operations. They are capable of recognizing and avoiding possible dangers. These people are qualified due to their professional training, experience and/or instruction. They know the relevant standards, laws, provisions, accident prevention regulations and the company conditions.

3 Functional description

3.1 Overview of the instrument

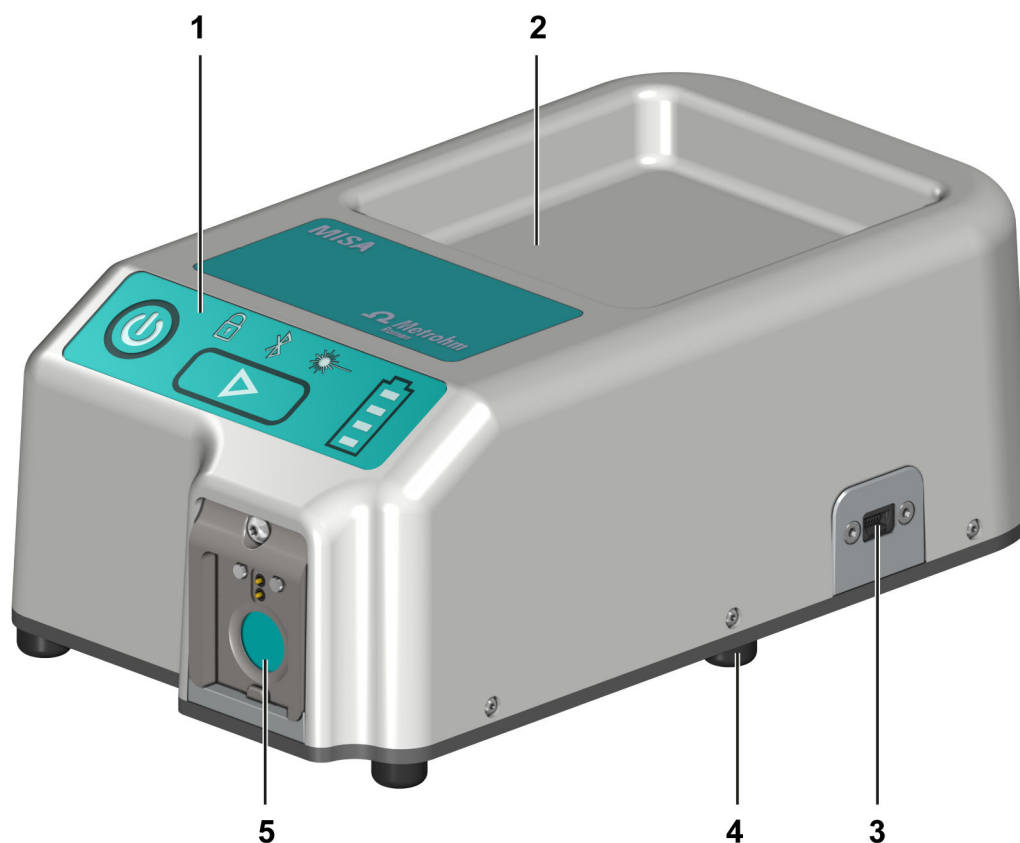


Figure 2 Misa – Front

- | | |
|--|--|
| <p>1 Control bar with indicators
Operate Misa and observe its status. See <i>"Control bar with indicators"</i>, page 16.</p> <hr/> <p>3 USB connector
Connect Misa to a computer. See <i>"Connecting Misa via USB"</i>, page 21.</p> <hr/> <p>5 Magnetic Smart Tip fixture / laser aperture
Attach Smart Tips for data acquisition. See <i>"Attaching Smart Tips"</i>, page 25.</p> | <p>2 Storage compartment
Store samples and Smart Tips.</p> <hr/> <p>4 Rubber foot
Misa is portable but operated standing on rubber feet.</p> |
|--|--|

3.2 Smart Tips

Each Smart Tip allows an individual way of data acquisition. Smart Tips are attached to the instrument with magnetic connectors. Smart Tips contain a memory chip so that the instrument can identify them. Due to design, Smart Tips will not allow operation of Misa when seated in an incorrect position.

The following Smart Tips are available:

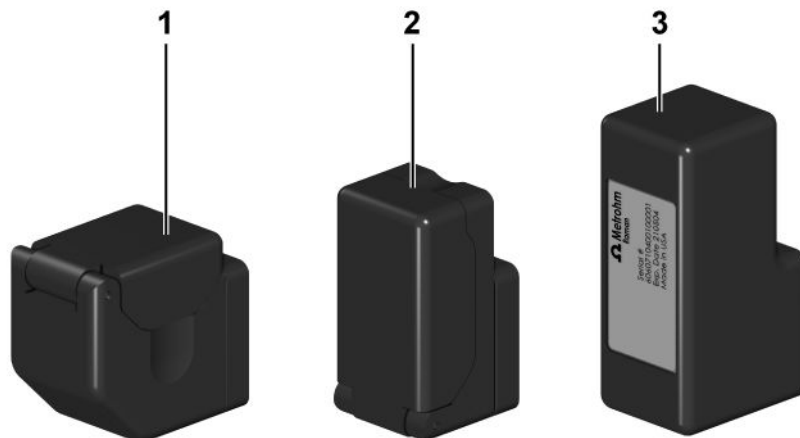


Figure 3 Misa – Smart Tips

1 Misa Vial Holder (6.07505.040)

The Misa Vial Holder is used for samples in glass vials.

The interlock mechanism allows measurement with class 1 laser operation. The laser stops if the lid is opened.

2 P-SERS Attachment (6.07505.030)

The P-SERS Attachment accommodates proprietary P-SERS substrates.

The interlock mechanism allows measurement with class 1 laser operation. The laser stops if the lid is opened.

3 Calibration Standard (6.07501.010)

The Calibration Standard is needed for the calibration of the instrument. The Calibration Standard contains an ASTM 1840 reference sample.

3.3 Control bar with indicators

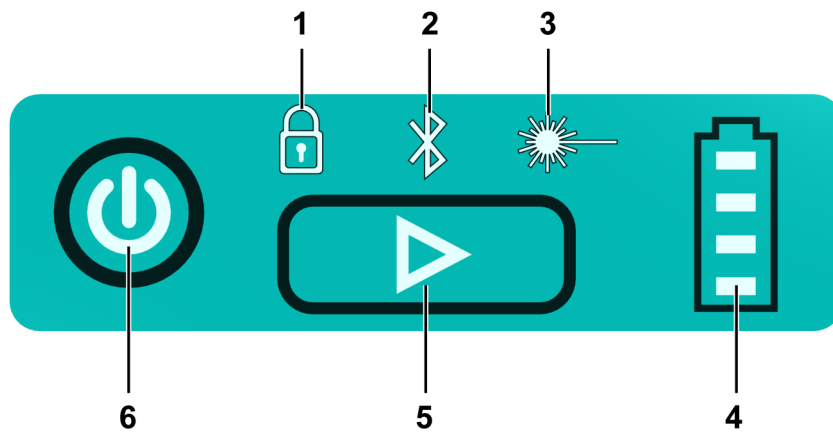


Figure 4 Misa – Control bar with indicators

- | | |
|---|--|
| <p>1 Lock indicator
Lights up when Misa is locked.</p> <hr/> | <p>2 Bluetooth indicator
Flashes blue when Misa is connected via Bluetooth connection.</p> <hr/> |
| <p>3 Laser indicator
Lights up when the laser is active.</p> <hr/> | <p>4 Battery charge indicator
Displays the charging status of the battery, see <i>"Battery charge indicator", page 20.</i></p> <hr/> |
| <p>5 PLAY button
Press the PLAY button to activate the laser for data acquisition.</p> | <p>6 Power button
Press the power button to switch Misa on or off. Lights up green when Misa is switched on. See <i>"Switching Misa on and off", page 24.</i></p> |

4 Transport and storage

4.1 Checking the delivery

Immediately upon arrival of the merchandise, check the shipment against the delivery note to ensure completeness and absence of damage.

4.2 Storing the packaging

The product is supplied in extremely protective packaging together with the separately packed accessories. Keep this packaging, as only this ensures safe transportation of the product.

5 Installation

5.1 Setting up the product

The product has been developed for operation indoors and may not be used in explosive environments.

Place the product in a location of the laboratory which is suitable for operation and free of vibrations and which provides protection against corrosive atmosphere and contamination by chemicals.

Observe the dimensions and weights of the individual products and modules that are part of the complete system. You will find this information in the "Technical specifications" section.

Protect the product against excessive temperature fluctuations and direct sunlight.

The power cord and other connecting cables must not be replaced with impermissible cables.

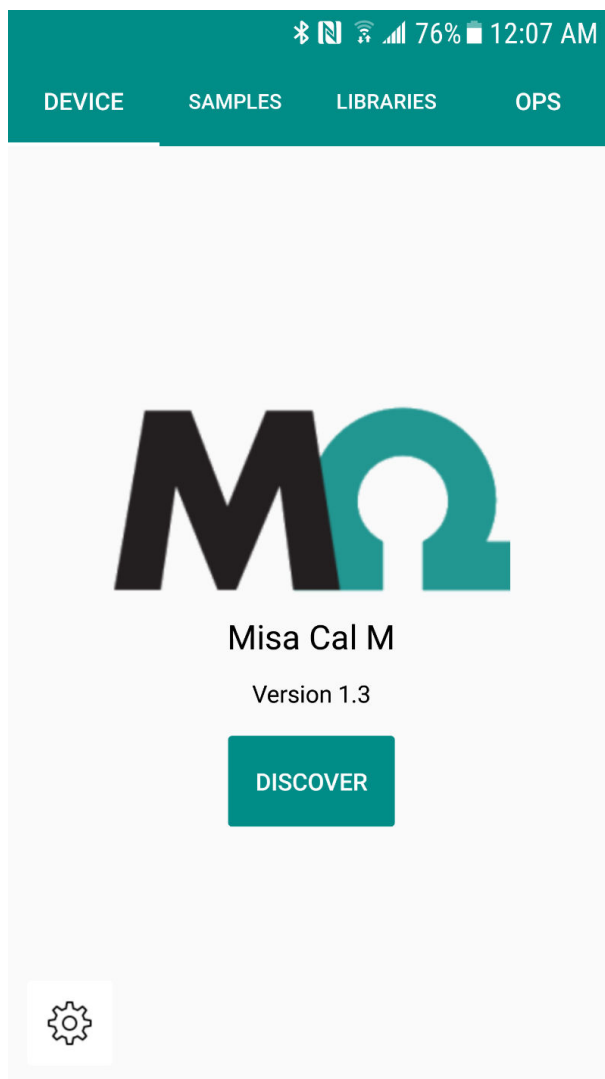
The power cord, where available, or other cables connecting to control instruments must be accessible during operation.

5.2 Installing Misa Cal on Windows®

Refer to the Misa Cal software tutorial (8.0105.8024) for the installation of Misa Cal desktop software on a Windows computer.

5.3 Installing Misa Cal M for Android™

Refer to the Misa Cal M mobile app tutorial (8.0105.8025) for the installation of Misa Cal M on an Android device.



5.4 Supplying Misa with energy

Misa is provided with an internal battery. The charge status of the internal battery is displayed on the battery charge indicator on the Misa control bar.



NOTICE

The internal battery is not user replaceable. To service the battery, please contact Metrohm Service.

5.4.1 Charging the internal battery

- 1 To supply Misa with energy and charge the internal battery, connect Misa with the USB Mini-B cable to a 5V power source or a computer.



NOTICE

We do not recommend to use third party USB cables, only use the provided Metrohm USB Mini-B cable (6.2151.110).

5.4.2 Battery charge indicator

The charge status of the internal battery is displayed on the battery charge indicator on the Misa control bar:

Table 3 Battery charge indicator

Battery indicator	Charge status
	4 bars (100 %)
	3 bars (75 %)
	2 bars (50 %)
	1 bar (25 %)
	Low battery warning We recommend to charge the battery when the battery indicator is flashing.



NOTICE

Misa switches off if the battery charge status is below 5 %.

5.6 Connecting Misa via Bluetooth

The Bluetooth connection enables operation of Misa with Misa Cal M mobile app.

Connecting Misa to Misa Cal M via Bluetooth

- 1 Connect Misa with the USB Mini-B cable to a computer or a 5V power source.

Connection via USB to a computer or a 5V power source supplies Misa with energy and charges the internal battery of Misa. See *"Supplying Misa with energy"*, page 19.



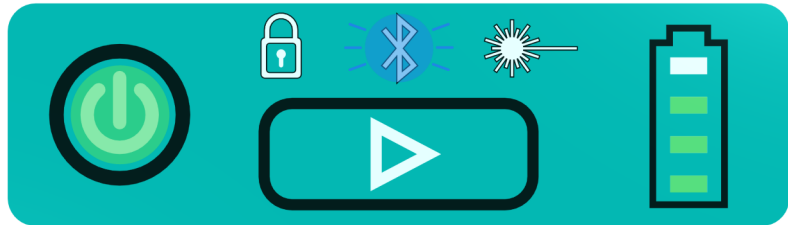
We do not recommend to use third party USB cables, only use the provided Metrohm USB Mini-B cable (6.2151.110).

- Misa needs to be within 10 m of the Android device, either tablet or smartphone.

- Misa is switched on.

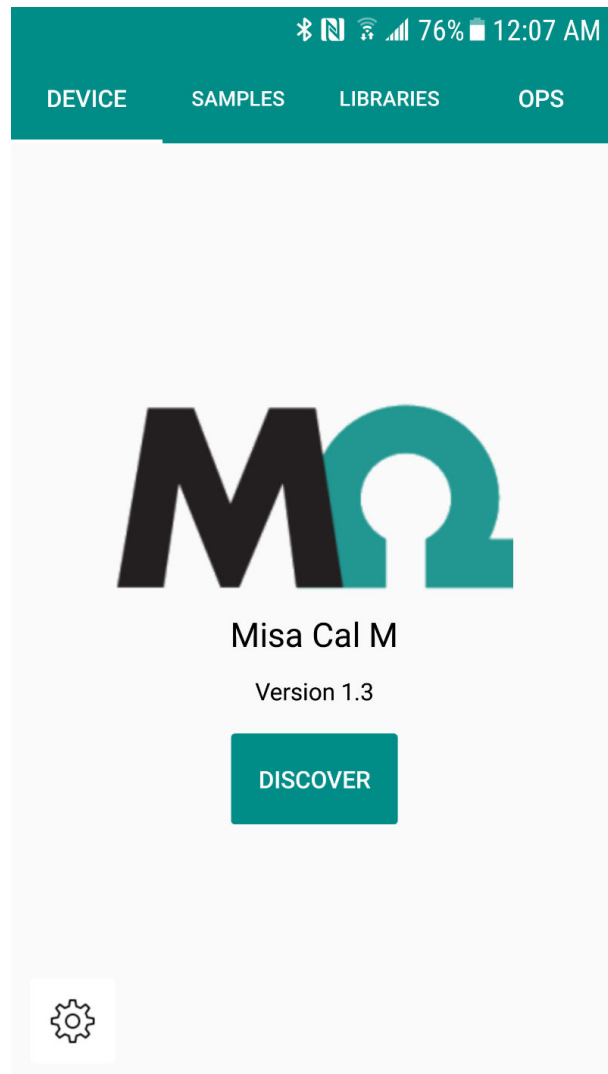
1 Enable Bluetooth on Misa

A blue flashing Bluetooth indicator on the control bar of Misa indicates that Bluetooth is enabled.



2 Pairing and connecting

- On the Android device, enable Bluetooth and open Misa Cal M.



- Click on **[Discover]**.



NOTICE

Misa will appear in the available devices with the model name followed by the serial number.

Example: Misa 192600200020300000

If no devices are detected, ensure that Misa is turned on and Bluetooth is enabled on the Android device.

- On the Android device, click on Misa 1926xxxxxxxxxxxxxx.



- Enter the PIN code **9999**. Click on **[OK]**.

The Android device is now connected to Misa and the Bluetooth indicator changes to slow flashing. Misa is ready to transfer or acquire data.

5.7 Switching Misa on and off

Switching Misa on

- 1** Press the power button for X seconds.

The power button lights up in green. Misa is ready for operation.

Switching Misa off

- 1 Disconnect the instrument from Misa Cal and Misa Cal M.

- 2** Press the power button for X seconds.

The green light of the power button goes out. Misa is switched off.

Forcing a shutdown



6 Operation and control

6.1 Attaching Smart Tips

Using Calibration Standard

- 1 Attach the Smart Tip by engaging the bottom edge of the Smart Tip into the bottom edge of the mounting point. Rotate the Smart Tip into position.





The lid contains a safety feature which cancels the measurement and stops the laser if you open the lid.

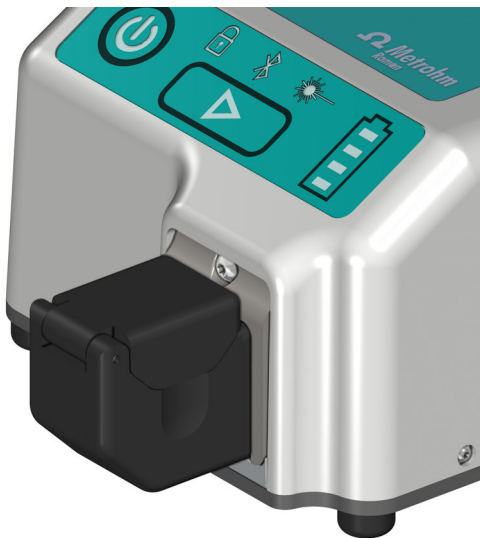
- 1 Attach the Smart Tip by engaging the bottom edge of the Smart Tip into the bottom edge of the mounting point. Rotate the Smart Tip into position.



- 2



- 3

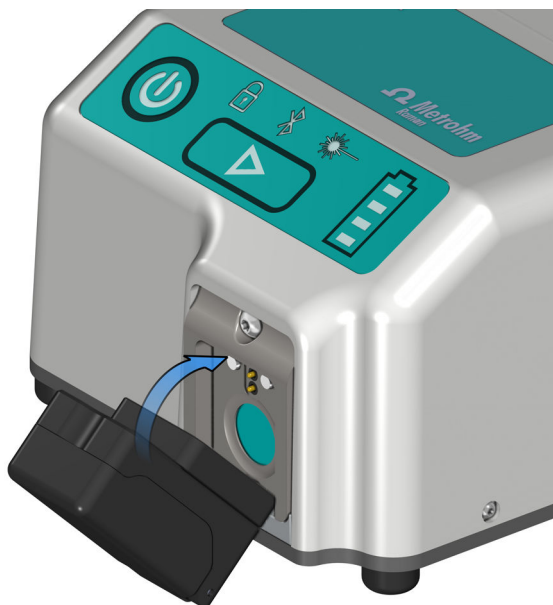


Using P-SERS Attachment

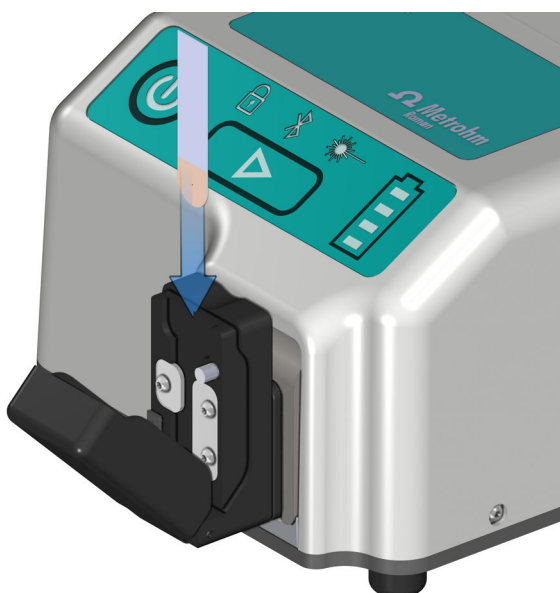
Closing the lid prevents laser radiation from emerging.

The lid contains a safety feature which cancels the measurement and stops the laser if you open the lid.

- 1 Attach the Smart Tip by engaging the bottom edge of the Smart Tip into the bottom edge of the mounting point. Rotate the Smart Tip into position.



- 2** Open the lid and place the SERS paper substrate, **printed side down and facing the laser aperture**, into the slot.



- 3



- 4



 NOTICE

Cleaning is intended to remove residues from previous substrates, rather than for polishing the window.

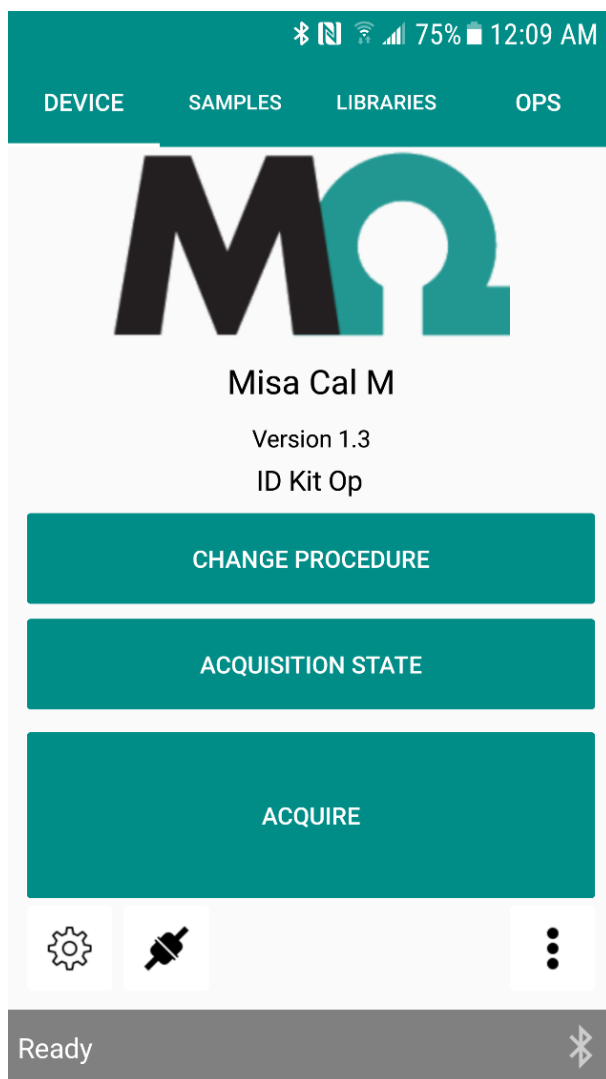
6.2 Acquiring data

Misa Cal desktop software

Refer to the Misa Cal software tutorial (8.0105.8024) for instruction on using Misa Cal desktop software to acquire data and configure the instrument.

Misa Cal M mobile app

Refer to the Misa Cal M mobile app tutorial (8.0105.8025) for instruction on using Misa Cal M app on an Android device to acquire data and configure the instrument.





WARNING

Electric shock from electrical potential

Risk of injury by touching live components or through moisture on live parts.

- Never open the housing of the instrument.
- Protect live parts (e.g. power supply unit, power cord, connection sockets) against moisture.
- If you suspect that moisture has gotten into the instrument, disconnect the instrument from the energy supply. Then notify Metrohm Service.
- Only personnel who have been issued Metrohm qualification may perform service and repair work on electrical and electronic components.
- The electrical safety of the instrument is ensured as part of the international standard IEC 61010.

Cleaning the surfaces of Misa

Prerequisites

- Misa is disconnected from the power grid.

1 Clean the surfaces with a damp cloth.



NOTICE

If the suspicion arises that liquids have found their way into the instrument, disconnect the instrument from the power grid and contact your Metrohm Service.



NOTICE

Water or ethanol can be used as a cleaning medium.

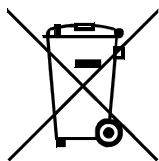


NOTICE

The connectors must only be cleaned with a dry cloth.



8 Disposal



This product is covered by European Directive, WEEE – Waste Electrical and Electronic Equipment.

The correct disposal of your old product will help to prevent negative effects on the environment and public health.

More details about the disposal of your old product can be obtained from your local authorities, from waste disposal companies or from your local dealer.



9 Technical specifications

9.1 Ambient conditions

Nominal function range	−20 ... +50 °C	at max. 93% relative humidity, noncondensing
Storage and Transport	−20 ... +70 °C	at max. 93% relative humidity, noncondensing

9.2 Energy Supply

Internal battery specifications	1.5 V, size AA	up to X hours
Nominal input voltage	5 V DC	
Power consumption	X mA max.	
USB Mini-A/B power requirements		instrument connected to a powered USB hub
Input voltage	5 V DC	
Nominal input current	X mA max.	

9.3 Interfaces

USB connector	Type A/B mini USB connector (USB 2.0) with the following functions:	Power supply Data transmission with USB cable (6.2151.110)
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Temporal emission structure	CW
Detection technique	Orbital Raster Scan (ORS™) to average over the sample
Laser class according to EN 60825-1	Class 1
Protection Level of goggles (according to EN 207)	D LB5 775 ... 795 nm