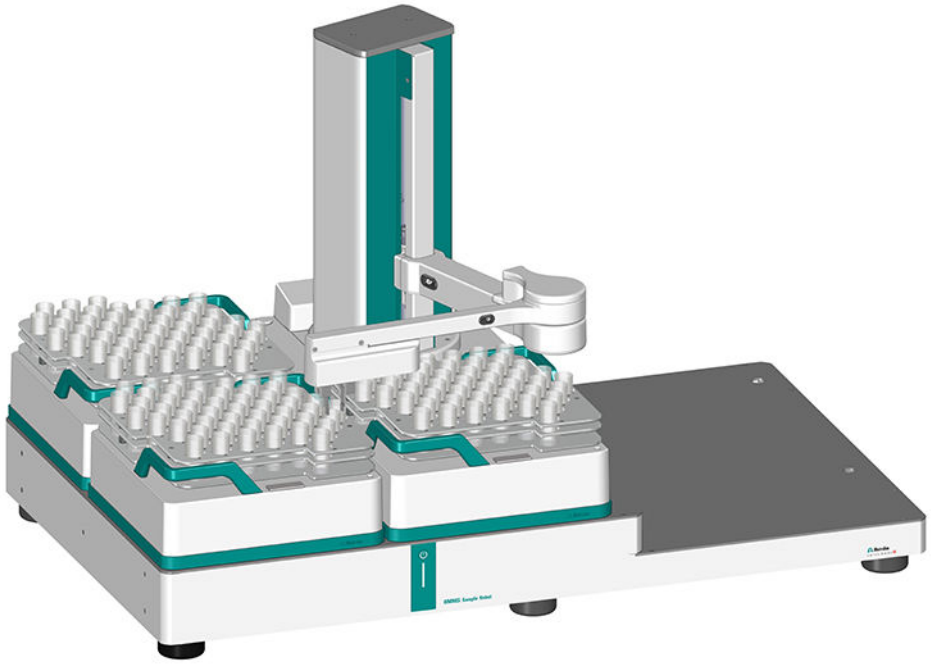
OMNIS Sample Robot NIR



2.1073.0010 / 2.1074.0010

Manual

8.1074.8101EN / v2 / 2025-07-04

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Manual

8.1074.8101EN / v2 /
2025-07-04

Technical Communication
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This documentation is an original document.

This documentation has been prepared with great care. However, errors can never be entirely ruled out. Please send comments regarding possible errors to the address above.

Disclaimer

Deficiencies arising from circumstances that are not the responsibility of Metrohm, such as improper storage or improper use, etc., are expressly excluded from the warranty. Unauthorized modifications to the product (e.g., conversions or attachments) exclude any liability on the part of the manufacturer for resulting damage and its consequences. Instructions and notes in the Metrohm product documentation must be strictly followed. Otherwise, Metrohm's liability is excluded.

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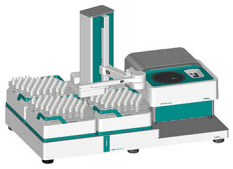
1 Overview

1.1 Product description



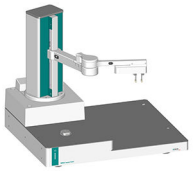
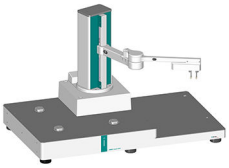
The OMNIS Sample Robot NIR is a sample robot for automatic sample change during spectroscopic analyses. The instrument may be used only in combination with an OMNIS NIR Analyzer (Liquid, Solid, Liquid/Solid). Depending on the product version, one or more OMNIS sample racks with liquid or solid samples can be provided.

Observe the OMNIS NIR Analyzer manual for handling the OMNIS NIR Analyzer and the sample vials.

1.2 Product versions

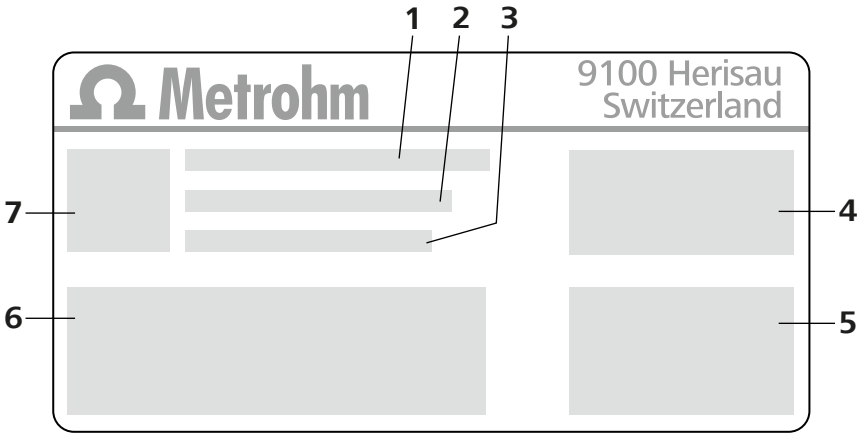
The product is available in the following versions:

Table 1 Product versions

Instrument	Article number	Designation	Version feature
	2.1073.0010	OMNIS Sample Robot S – NIR	1 rack holder for OMNIS sample racks
	2.1074.0010	OMNIS Sample Robot M – NIR	3 rack holders for OMNIS sample racks

Information on function licenses and software licenses is available on the *Metrohm website* or from the regional Metrohm representative.

The article number and serial number for identification of the product can be found on the type label:



1	**(01) = Article number in accordance with GS1 standard**	**2**	**(21) = Serial number**
3	**(240) = Metrohm article number**	**4**	**Certification**
5	**Technical specifications**	**6**	**Certification**
7	**QR code**		

1.3 About the documentation

Possible depictions in the documentation:

Depiction	Meaning
*(5-**12**)*	Cross-reference to figure legend (Figure number - ***Element in the figure***)
1	Instruction step
Method	Parameters, menu items, tabs, and dialogs
File ▶ **New**	Menu path
[Continue]	Button or key
	Supplementary information to the descriptive text
	Note In graphics, orange arrows or frames indicate the reference to the descriptive text. The relevant elements may also be colored orange.

Movement

In graphics, blue arrows indicate the movement direction. The elements to be moved may also be colored blue.

1.4 Further information

Additional information on the product is available on the following pages:

- Metrohm website *https://www.metrohm.com* – Overview of product family, documents as PDF, details of accessories, and information on applications.
- Help for the OMNIS Software *https://guide.metrohm.com* – Thematically filtered information on OMNIS Software.

1.5 Displaying the accessories

Up-to-date information on the scope of delivery and on optional accessories can be found on the Metrohm website.

1 Searching for a product on the website

- Go to *https://www.metrohm.com*.
- Click on .
- Enter the article number of the product into the search field and press **[Enter]**.
  - Article number: See *Product versions, chapter 1.2, page 1*
- In the result list, click on the desired product.

Detailed information regarding the product is displayed.

2 Displaying the accessories

- Scroll down (accessories subject to availability):
  - Included parts
  - Optional parts

3 Downloading the accessories list (included and optional parts)

- Click on to download the accessories list as a PDF.

Metrohm recommends keeping the downloaded PDF for reference purposes.

2 Safety

2.1 Intended use

The **OMNIS Sample Robot NIR** is suitable for automatic sample change during spectroscopic analyses with an OMNIS NIR Analyzer (Liquid, Solid, Liquid/Solid). The sample robot transports liquid or solid samples from the OMNIS sample rack to the OMNIS NIR Analyzer and back to the OMNIS sample rack after the measurement.

The instrument is designed for indoor use, typically in laboratories or manufacturing sites (incoming goods inspection, atline analysis, offline analysis).

2.2 Responsibility of the operator

The operator must ensure that the basic national and international regulations on occupational safety and accident prevention in chemical laboratories are observed. The operator has the following responsibilities:

- Instruct personnel in the safe handling of the product.
- Train personnel in the use of the product according to the user documentation (e.g. install, operate, clean, eliminate faults).
- Train staff on basic occupational safety and accident prevention regulations.
- Provide personal protective equipment (e.g. protective glasses, gloves).
- Provide suitable tools and equipment to execute the work safely.
- Ensure compliance with applicable laws, regulations and standards.

The product may be used only when its status is perfect. The following measures are required to ensure the safe operation of the product:

- Check the condition of the product before use.
- Remedy defects and malfunctions immediately.
- Maintain and clean the product regularly.

2.3 Requirements for operating personnel

Only qualified personnel may operate the product. Qualified personnel are persons who meet the following requirements:

- Basic regulations on occupational safety and accident prevention for chemical laboratories are known and complied with.
- Knowledge of handling hazardous chemicals is present. Personnel have the ability to recognize and avoid potential dangers.
- Knowledge regarding the application of fire prevention measures for laboratories is available.
- Safety-relevant information is communicated and understood. The personnel can operate the product safely.
- The user documentation has been read and understood. The personnel operate the product according to the instructions in the user documentation.

2.4 Safety instructions

2.4.1 Danger from electrical potential

Contact with electrical potential can cause serious injuries or death. To avoid danger from electrical potential, observe the following:

- Operate the product only if it is in perfect condition. The housing must also be intact.
- Only use the product with the covers fitted. If covers are damaged or missing, disconnect the product from the energy supply and contact the regional Metrohm service representative.
- Protect live components (e.g. power supply unit, power cord, connection sockets) against moisture.
- Always have maintenance work and repairs on electrical components carried out by a regional Metrohm service representative.
- Disconnect the product from the energy supply immediately if at least one of the following cases occurs:
  - The housing is damaged or open.
  - Live parts are damaged.
  - Moisture penetrates.

2.4.2 Danger from biological and chemical hazardous substances

Contact with biological hazardous substances may cause poisoning from toxins or infections from microorganisms. Contact with aggressive chemical substances may cause poisoning or chemical burns. To avoid danger from biological or chemical hazardous substances, observe the following:

- Label the product according to regulations if it is used for substances that have a potential for chemical hazards and are generally subject to the Hazardous Substances Ordinance.
- Wear personal protective equipment (e.g. protective glasses, gloves).
- Use exhaust equipment when working with vaporizing hazardous substances.
- Dispose of hazardous substances in accordance with regulations.
- Clean and disinfect contaminated surfaces.
- Only use detergents that do not cause any unwanted side reactions with the materials to be cleaned.
- Dispose of chemically contaminated materials (e.g. cleaning material) in accordance with regulations.
- Proceed as follows in case of a return shipment to Metrohm AG or a regional Metrohm representative:
  - Decontaminate the product or product component.
  - Remove the labeling for hazardous substances.
  - Create a declaration of decontamination and enclose it with the product.

2.4.3 Danger from highly flammable substances

Using highly flammable substances or gases may cause fires or explosions. To avoid danger from highly flammable substances, observe the following:

- Avoid ignition sources.
- Use protective grounding.
- Use exhaust equipment.

2.4.4 Danger from leaking liquids

Leaking liquids may cause injuries and may damage the product. To avoid danger from leaking liquids, observe the following:

- Check the product and its accessories at regular intervals for leakages and loose connections.
- Remove and dispose of escaping liquids in accordance with regulations.
- If you suspect that liquid has penetrated the instrument, disconnect the instrument from the energy supply. Then have the instrument checked by a regional Metrohm service representative.

2.4.5 Danger during transport of the product

Risk of injury during transport of the product. To ensure safe transport, observe the following:

- Transport must be carried out only by a regional Metrohm service representative.
- Note the weight of the OMNIS Sample Robot NIR and the OMNIS NIR Analyzer and plan additional personnel for the transport of the instruments accordingly.

The regional Metrohm service representative also carries out the necessary calibration after transport.

2.4.6 Dangers from hot surfaces and liquids

Contact with hot surfaces or hot liquids may cause burns. To avoid the risk of injury, observe the following:

- Wear heat-resistant protective gloves.
- Clean up spilled liquids and solids immediately.

2.4.7 Dangers due to automated motion sequences

Product parts that move automatically (e.g. robot arm) can cause injuries due to crushing or clamping. To avoid the risk of injury, observe the following:

- Do not reach into the working area of the products during the work processes.

2.5 Design of warning messages

The present documentation uses warning messages as follows.

Structure

1. Severity of the danger (signal word)
2. Type and source of danger
3. Consequences of disregarding the danger
4. Measures for averting the danger

Hazard levels

Signal color and signal word designate the hazard level.

DANGER

Indicates an immediate danger. It will result in serious injuries or death if not avoided.

WARNING

Indicates a potential danger. Failure to avoid the danger may result in death or serious injury.

CAUTION

Indicates a potential danger. If not avoided, it may result in light or minor injuries.

NOTICE

Indicates a potentially damaging situation. If not avoided, the product or something in the surrounding area could be damaged.

2.6 Meaning of warning signs

Warning signs on the product or in the documentation indicate potential dangers or draw attention to certain behaviors in order to avoid accidents or damage.

Depending on the application purpose, the operating company attaches additional warning signs to the product. The corresponding instructions of the operator must be followed.

Table 2 Warning signs according to ISO 7010 (examples)

Warning signs / meaning		Warning signs / meaning	
	General warning sign		Warning of hot surface
	Warning of sharp object (cut/ puncture)		Warning of hand injuries (crushing)
	Warning of electrical voltage		Warning of corrosive substances
	Warning of optical radiation		Warning of a laser beam
	Warning of flammable materials		Warning of biological hazard
	Warning of toxic materials		

3 Functional description

3.1 Overview

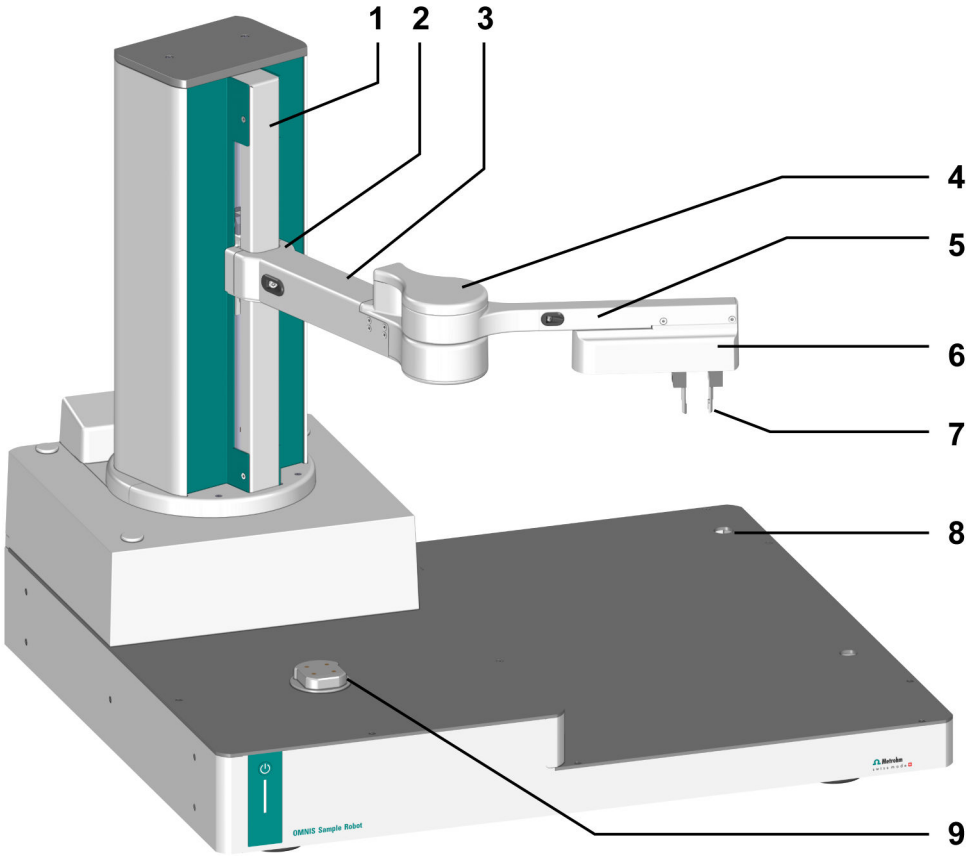


Figure 1 Example: OMNIS Sample Robot S – NIR

1	**Main lift**	**2**	**Arm holder**
3	**Lift arm**	**4**	**Arm joint**
5	**Gripper arm**	**6**	**Gripper**
7	**Gripper fingers**	**8**	**Recess for foot of the OMNIS NIR Analyzer**
9	**Rack holder**		

The **robot arm** consists of the lift arm*(1-**3**)*, the arm joint *(1-**4**)*, and the gripper arm*(1-**5**)*.

The main lift *(1-**1**)* uses the arm holder *(1-**2**)* to move the robot arm up and down.

The gripper fingers *(1-**7**)* are mounted on the gripper *(1-**6**)*.

The OMNIS sample racks are placed on the rack holders*(1-**9**)*. Sensors in the rack holder let the system know if and which sample racks are in place.

If, for example, a sample rack is removed, then the system will recognize that the sample rack is missing. This sample rack will no longer be approached and it is displayed as absent in the OMNIS Software.

3.1.1 Robot arm – Movement capacity

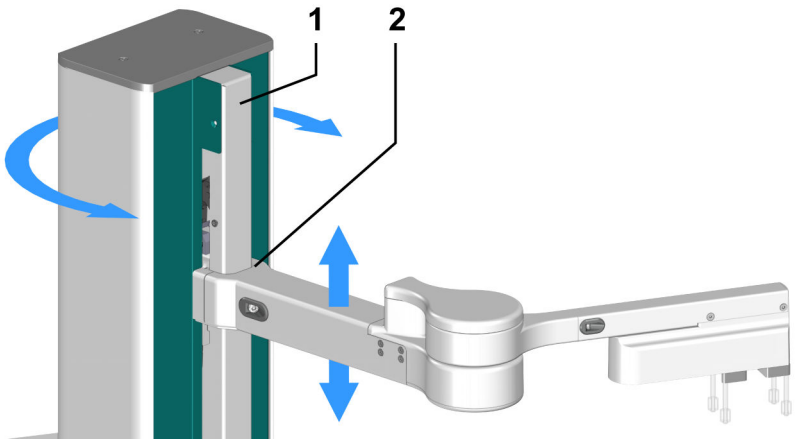


Figure 2 Main lift

1 Main lift	**2 Arm holder**

The main lift *(2-**1**)* can be rotated to the left and right. The arm holder *(2-**2**)* on the main lift moves the robot arm up and down.

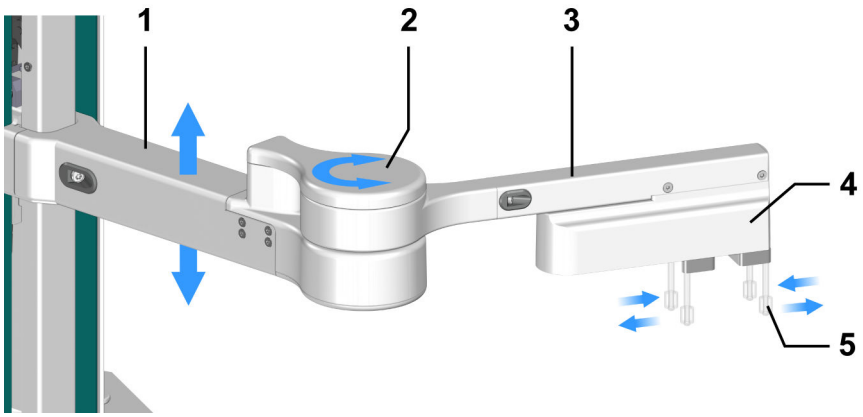


Figure 3 Robot arm

1 Lift arm	**2 Arm joint**

3	**Gripper arm**	**4**	**Gripper**
5	**Gripper fingers**		

The arm joint *(3-**2**)* is used to rotate the gripper arm *(3-**3**)* to the left and right. The gripper *(3-**4**)* opens and closes the gripper fingers *(3-**5**)* in order to grasp and hold sample vessels.

3.1.2 OMNIS sample rack – Overview

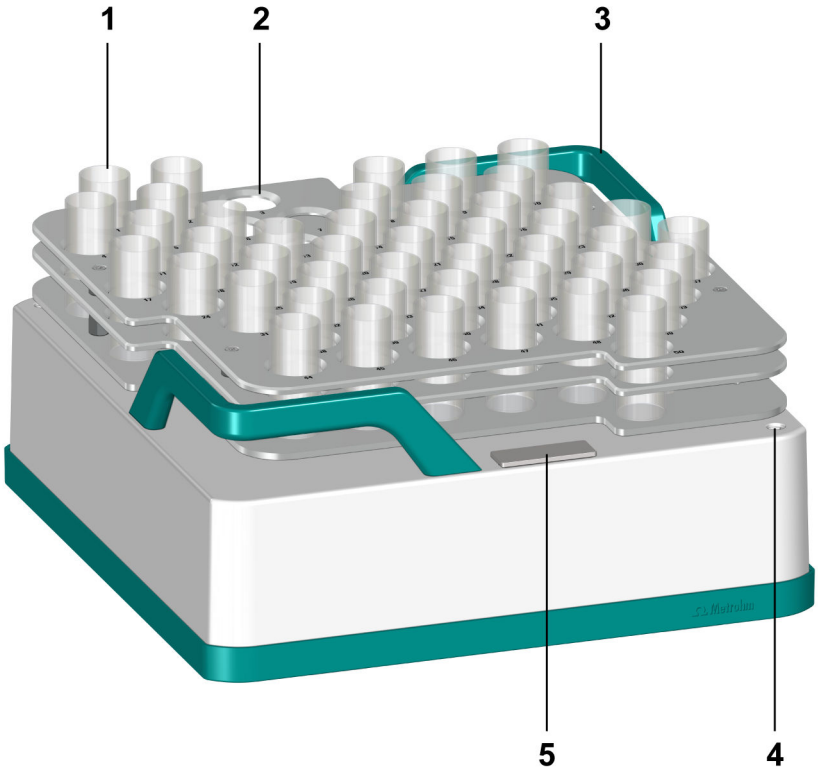


Figure 4 OMNIS sample rack – Overview

1	**Sample vials**	**2**	**Sample position**
3	**Transport handles**	**4**	**Spout hole**
5	**Label holder**		

The sample vials *(4-**1**)* are deployed in the sample positions *(4-**2**)*.

The transport handles *(4-**3**)* can be used to hold and transport the sample rack.

Spout holes *(4-**4**)* make it possible to pour out any liquids that have penetrated the instrument.

The sample rack is not dishwasher-safe.

Table 3 OMNIS sample racks and sample vials (disposable vials)

	OMNIS sample rack		Sample vials	
Use	**Article number**	**Number of vials**	**Article number**	**Name**
Liquid samples	6.02041.080	77	6.7402.240 (100 pieces)	Disposable vial, 8 mm, transmission, qty. 100
			Stoppers are included in the scope of delivery	
Solid samples	6.02041.090	77	6.7402.110 (123 pieces)	Disposable vials, 15 mm, reflection
			6.7402.200 (123 pieces)	Stopper for 6.7402.110
	6.02041.100	50	6.7402.120 (225 pieces)	Disposable vials, 19 mm, reflection
			6.7402.210 (225 pieces)	Stopper for 6.7402.120
	6.02041.110	50	6.7402.130 (172 pieces)	Disposable vials, 22 mm, reflection
			6.7402.220 (172 pieces)	Stopper for 6.7402.130
	6.02041.130*	50	6.2419.000 (1,000 pieces)	Sample glass 6 mL
			6.1448.050 (1,000 pieces)	Aluminum septum cap
	6.02041.120	27	6.7402.140 (216 pieces)	Disposable vials, 28 mm, reflection
			6.7402.230 (216 pieces)	Stopper for 6.7402.140

* usable from OMNIS Software version 4.4

3.2 Indicators and controls

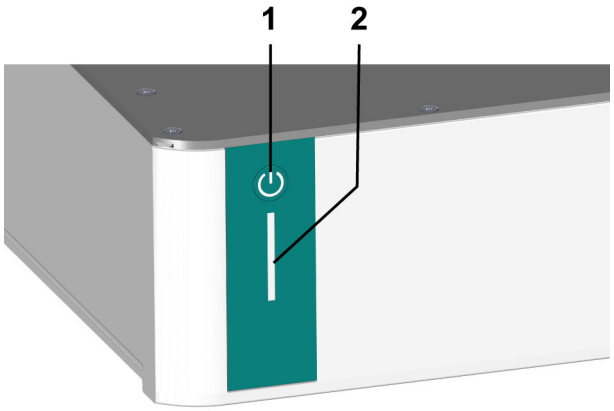


Figure 5 Indicators and controls

1 On/off switch	**2 Status display** multi-colored

Table 4 Behavior of the on/off switch

Pressure duration	Function	Type of beep
Press briefly (1 s)	Switching on the device	A beep sounds as soon as the LED flashes yellow (instrument can be reserved by an OMNIS system)
Press briefly (2 s)	Shut down the instrument	Beep after 2 s
Press and hold (approx. 5 s)	Gripper opens	Dual beeps

See also

Switching on and off (chapter 6.2, page 21)

System – Signals (chapter 3.3, page 14)

3.3 System – Signals

System components with status indicators show their operating status with colors and/or flashing patterns. The meaning of the colors and flashing patterns is explained in the following table.

Visual signal		Meaning
	LED lights up yellow.	System start or initialization
	LED flashes yellow (slowly).	Ready for connection setup or locking
	LED flashes yellow (fast).	Connection setup started or locking underway
	LED lights up green.	Ready for operation
	LED flashes green (slowly).	In operation
	LED flashes red (fast).	Malfunction or error

Some system components only use part of the explained flashing patterns.

3.4 Connectors

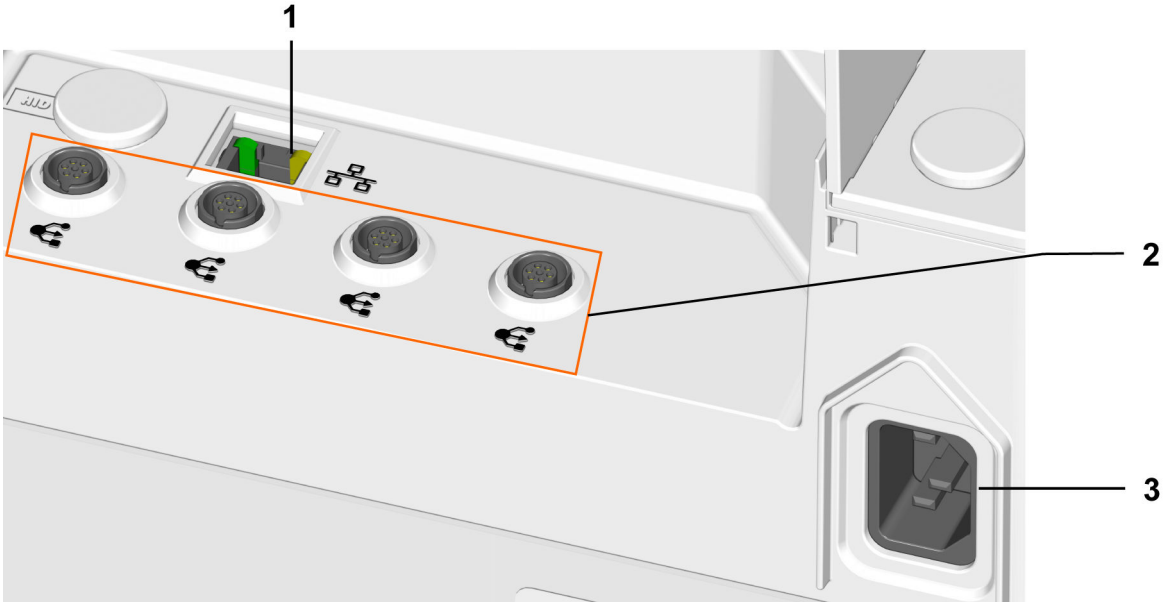


Figure 6 Connections on the rear

1 Ethernet network connection or LAN connector

LAN = Local Area Network.

Connection socket for a connecting cable to the local network

2 MDL connectors

MDL = Metrohm Device Link

Connection socket for connecting cables between OMNIS products

3 Power socket

Connection socket for the energy supply

4 Delivery and transport

4.1 Delivery

Inspect the delivery immediately upon receipt:

- Check the delivery against the delivery note to ensure completeness.
- Check the product for damage.
- If the delivery is incomplete or damaged, contact your regional Metrohm representative.

4.2 Packaging

The product and accessories are supplied in protective special packaging. Keep this packaging to ensure safe transportation of the product. If a transport locking device is present, keep this as well for future reuse.

5 Installation

5.1 Installation by Metrohm

Installation and start-up of the system is always carried out by the regional Metrohm service representative.

5.2 Setup location

The product is suitable only for operation indoors and may not be used in explosive environments.

The following requirements apply to the setup location:

- The room is well-ventilated and protected against both direct sunlight and excessive temperature fluctuations.
- The setup space is stable and free of vibrations. The setup space must be suitable for the dimensions and weight of the components (see technical specifications).
- All cables and connectors are accessible during operation. The cables are safely installed (no tripping hazards).
- The workplace is ergonomically designed and ensures trouble-free operation of the product.

The robot arm does not move in a horizontal direction beyond the base area of the sample robot.

A minimum clearance of 10 cm from walls and other OMNIS NIR Analyzer instruments must be maintained for the OMNIS NIR Analyzer.

5.3 Placing the OMNIS NIR Analyzer

As a basic rule, the placing of the OMNIS NIR Analyzer on the sample robot is carried out by the regional Metrohm service representative. The service representative then calibrates the sample robot.

Do not remove the **OMNIS NIR Analyzer from the sample robot**
If the OMNIS NIR Analyzer is removed from the sample robot, then a regional Metrohm service representative must place the OMNIS NIR Analyzer back on the sample robot and recalibrate the sample robot.

5.4 Plugging in the power cord

WARNING

Health hazards from electrical potential.

Severe injuries with possibly fatal consequences.

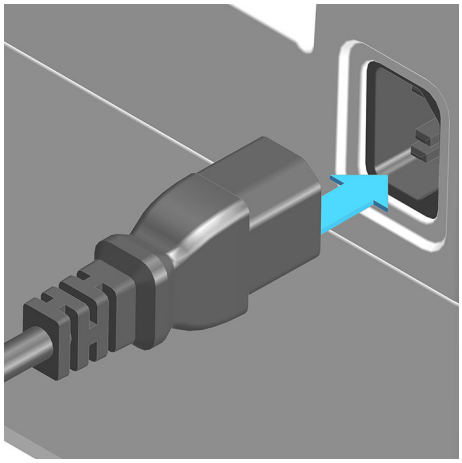
- Operate the product only if it is in perfect condition. The housing must also be intact.
- Only use the product with the covers fitted.
- Protect live components (e.g. power supply unit, power cord, connection sockets) against moisture.
- Always have maintenance work and repairs on electrical components carried out by a regional Metrohm service representative.

Required accessories:

- Power cord:
  - Length: max. 2 m
  - Number of conductors: 3, with protective ground
  - Conductor cross-section: 3x min. 1.0 mm^2 / 18 AWG
- Instrument plug:
  - IEC 60320, type C13, 10 A

- Power plug:
  - 6.2122.XX0 (according to customer requirement), min. 10 A

1



- Plug the power cord into the product's power socket. Use only permitted power cords.
- Connect the power cord to the energy supply.

6 Operation and control

6.1 Operation

Observe the OMNIS NIR Analyzer manual for handling the OMNIS NIR Analyzer and the sample vials.

OMNIS Software – Operation

The OMNIS Sample Robot NIR is operated using the OMNIS Software. Additional information on the OMNIS Software: *See OMNIS help*.

OMNIS Software – Method development

Templates for operating procedures and methods can be imported into the OMNIS Software.

The following guide values apply to the lift height, depending on the gripper position. The values must be tested and adjusted if necessary.

Table 5 Guide values for the lift height

Samples	Vials	Lift height (guide value)
Liquid samples	Sample vial with stopper	Sample rack: 154 mm
		Sample presentation: 162 mm
Solid samples	Sample vial with stopper	Sample rack: 161 mm
		Sample presentation: 116 mm
	Sample glass 6 mL with aluminum septum cap	Sample rack: 154 mm
		Sample presentation: 118 mm

Holding positions

- Liquid samples: The gripper fingers must lift the sample vials by their stoppers.
- Solid samples:
  - Vial with stopper: The gripper fingers must grip the sample vials below their stoppers.
  - Sample glass 6 mL with aluminum septum cap: The gripper fingers must grip the sample vials at their caps.

6.2 Switching on and off

NOTICE

Data loss

Disconnecting OMNIS instruments from the power grid (e.g. with a connector strip) may lead to irreversible data loss. If the instrument can no longer be used, contact your regional Metrohm service representative.

- Press the on/off switch for 2 seconds to safely shut down the instrument.
- Wait until the status display goes out and only then disconnect the electricity.

1 Switching on the Sample robot

Press the on/off switch for 1 second.

- The status display lights up in yellow. A single beep sound will then be heard. There will be a further beep sound for each attached rack.
- The status display flashes yellow as soon the sample robot is ready to connect to the OMNIS Software.
- The status display flashes green as soon as the sample robot is connected to the OMNIS Software and is ready for operation.

2 Switching off the Sample robot

Press the on/off switch for 2 seconds until the single beep sound is heard.

- The status display goes out and the Sample robot is switched off.

See also

Indicators and controls (chapter 3.2, page 13)

6.3 Attaching and removing the OMNIS sample rack

WARNING

Chemical hazardous substances

Contact with aggressive chemical substances may cause poisoning or chemical burns.

- Do not attach or remove the sample rack while work processes are running.
- Seal all sample vials with a stopper.
- Wear personal protective equipment (e.g. protective glasses, gloves).
- Use exhaust equipment when working with vaporizing hazardous substances.
- Clean contaminated surfaces.
- Only use detergents that do not cause any unwanted side reactions with the materials to be cleaned.
- Dispose of chemically contaminated materials (e.g. cleaning material) in accordance with regulations.

Attaching and removing the OMNIS sample rack

1 Parking the robot arm

If the sample robot is in operation:

- Select the sample robot in the OMNIS Software under **Equipment** ▶ **Instruments**.
- Select the park position in the **Manual control** window:

  P

- Wait until the message appears that the park position has been reached.

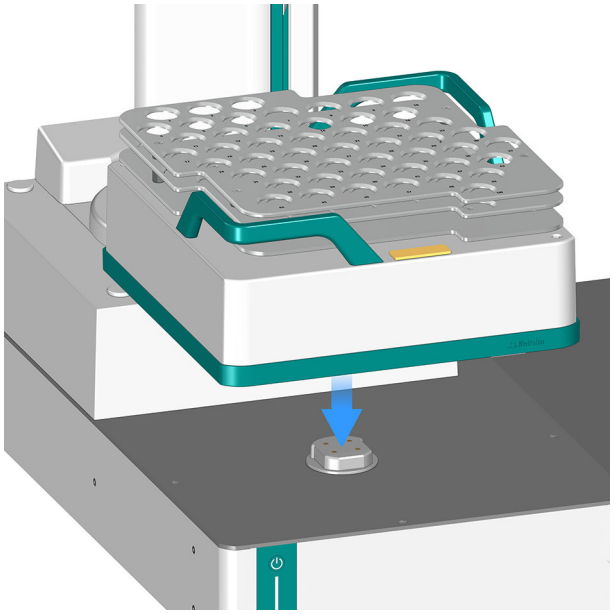
2 Removing the OMNIS sample rack

A rack that is used in the determination run and that is marked with the icon may not be replaced. One or more samples of this rack are still in progress and must be placed back onto the rack.

- Using both hands, grip the sample rack by the transport handles and remove it towards the top.

A brief signal will sound as soon as the sample rack has been removed.

3 Attaching the OMNIS sample rack



- Place the sample rack so that the label holder *(4-**5**)* is at the front.
- Using both hands, grip the sample rack by the transport handles and set it down on the rack holder *(1-**9**)*.

A brief signal will sound as soon as the sample rack has been attached and recognized.

The sample rack is designed for safe installation and the shape of the rack holder ensures that it can be placed in only one position.

4 Releasing the robot arm

Release the robot arm once again to allow waiting samples to continue to be processed.

6.4 Working with liquid samples

- Observe the OMNIS NIR Analyzer manual.
- Use only original sample vials with original stoppers *(see table 3, page 12)*.
  Original articles withstand mechanical effects, heat, and temperature fluctuations. The original sample vials fulfil the optical requirements for spectroscopic measurements.
- Do not place any sample vials or other objects on the OMNIS NIR Analyzer. The area above the base area of the sample robot must remain free for the movements of the robot arm.
- Before starting the analysis:
  - Insert the matching, empty sample holder into the liquid sample presentation of the OMNIS NIR Analyzer.
  - Seal all sample vials in the sample rack with a stopper.

CAUTION

Hot sample vials

Burns to the skin due to contact with hot surfaces or hot liquids. Samples, sample vials, sample holders and the sample presentation can reach temperatures of up to 85 °C.

- Wear personal protective equipment and heat-resistant protective gloves.
- Clean up spilled liquids and solids immediately.

6.5 Working with solid samples

- Observe the OMNIS NIR Analyzer manual.
- Use only original sample vials with original stoppers *(see table 3, page 12)*.
  Original articles withstand mechanical effects. The original sample vials fulfil the optical requirements for spectroscopic measurements.
- Do not place any sample vials or other objects on the OMNIS NIR Analyzer. The area above the base area of the sample robot must remain free for the movements of the robot arm.
- Before starting the analysis:
  - Keep the solid sample presentation clear – remove the sample holder and sample vial.
  - Seal all sample vials in the sample rack with a stopper.

7 Maintenance

7.1 Cleaning the product surface

Regularly clean the product to prevent malfunctions and to ensure a long service life.

- Remove spilled chemicals immediately.
- Protect plug connections against contamination.

WARNING

Chemical hazardous substances

Contact with aggressive chemical substances may cause poisoning or chemical burns.

- Wear personal protective equipment (e.g. protective glasses, gloves).
- Use exhaust equipment when working with vaporizing hazardous substances.
- Clean contaminated surfaces.
- Only use detergents that do not cause any unwanted side reactions with the materials to be cleaned.
- Dispose of chemically contaminated materials (e.g. cleaning material) in accordance with regulations.

WARNING

Health hazards from electrical potential.

Severe injuries with possibly fatal consequences.

- Operate the product only if it is in perfect condition. The housing must also be intact.
- Only use the product with the covers fitted.
- Protect live components (e.g. power supply unit, power cord, connection sockets) against moisture.
- Always have maintenance work and repairs on electrical components carried out by a regional Metrohm service representative.

Prerequisite:

- The product is switched off and disconnected from the energy supply.

Required accessories:

- Cleaning cloth (soft, lint-free)

- Water or ethanol

1 Clean the surface with a damp cloth. Remove persistent contamination with ethanol.

2 Wipe the surface with a dry cloth.

3 Clean the connectors with a dry cloth.

7.1.1 Spilled liquids

OMNIS Sample Robot NIR and OMNIS sample rack

1 **Cleaning up spilled liquids**

- Switch off devices and disconnect them from the energy supply.
- Clean up spilled liquids immediately.

2 **OMNIS sample rack: Pouring out ingressed liquids**

- Remove all sample vials from the sample rack.
- Use the spout hole to pour out and eliminate any liquids that have penetrated the sample rack.

3 **Contacting your regional Metrohm service representative**

Contact your regional Metrohm service representative in the following cases:

- If liquid is suspected to have penetrated the sample robot or the sample rack.
- If powder or other solids are suspected to have penetrated the sample rack.

7.2 Maintenance

Perform maintenance work on the product at regular intervals to prevent functional disruptions and to ensure a long service life.

- Metrohm recommends having the products maintained by the regional Metrohm service representative as part of an annual service. Shorter maintenance intervals may be necessary if you frequently work with caustic and corrosive chemicals.
- Only perform maintenance work that is described in this instruction. Contact your regional Metrohm service representative for further maintenance work and repairs. The regional Metrohm service representative offers every form of technical advice for maintenance and service of all Metrohm products.
- Only use spare parts that meet the technical requirements of the manufacturer. Original spare parts always meet these requirements.

8 Troubleshooting

Messages on malfunctions and errors are displayed in the control software or in the embedded software (e.g. on the display of an instrument) and contain the following information:

- Descriptions of causes of malfunctions (e.g. jammed drive)
- Descriptions of problems with the control (e.g. missing or invalid parameter)
- Information on how to solve the problem

System components with status display elements also indicate malfunctions and errors with a red flashing LED.

Troubleshooting on the product is often only possible with the control software or the embedded software (e.g. initializing, moving to a defined position).

See also

System – Signals (chapter 3.3, page 14)

8.1 Opening the gripper manually

In the event of a malfunction, sample vials must be removed manually from the gripper. It is not possible to initialize the sample robot if a sample vial is still in the gripper.

> **⚠ CAUTION**
>
> **Jammed drive and components**
>
> Risk of injury in the event of jammed, moving, and hot components. Contact with hot surfaces can cause burns. Contact with aggressive chemical substances may cause poisoning or chemical burns. To avoid danger, observe the following:
>
> - Wear personal protective equipment (e.g. protective glasses, gloves).
> - Loosen jamming only after switching off the instrument and allowing the components to cool down.

Prerequisite:

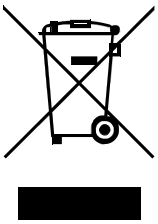
- The sample robot stands still.

1 Hold the sample vial in one hand.

2 Press and hold the on/off switch  for 5 seconds until a dual beep is heard.

The gripper opens and the sample vial can be removed.

9 Disposal



Properly dispose of chemicals and of the product to reduce negative effects on the environment and public health. Local authorities, waste disposal companies or dealers provide more detailed information on disposal. Observe the WEEE EU directive (WEEE = Waste Electrical and Electronic Equipment) for the proper disposal of waste electronic equipment within the European Union.

10 Technical specifications

10.1 Ambient conditions

Nominal function range	+5 to +45 °C	at max. 80% relative humidity, non-condensing
Storage	+5 to +45 °C	at max. 80% relative humidity, non-condensing
Altitude / Pressure range	Max. 3,000 m.a.s.l. / min. 700 mbar	
Overvoltage category	II	
Pollution degree	2	

10.2 Energy supply

OMNIS Sample Robot NIR		
Nominal voltage range	100–240 V AC	±10%
Nominal frequency range	50–60 Hz	±3%
Power consumption	max. 200 W	
Protection		
Internal fuse	4 ATH	cannot be replaced by the user
OMNIS sample rack		
Nominal voltage	5 VDC	internal
Power consumption	max. 0.5 W	

10.3 Measurements and weight

OMNIS Sample Robot S – NIR

Width	664 mm	
Height	594 mm	
Depth	560 mm	
Weight	24.4 kg	without OMNIS NIR Analyzer

OMNIS Sample Robot M – NIR

Width	944 mm	
Height	594 mm	
Depth	560 mm	
Weight	27.5 kg	without OMNIS NIR Analyzer

OMNIS sample rack

Width	277 mm	
Height	125 mm	
Depth	277 mm	
Weight	2.4 kg	

10.4 Housing

Material

Lid	PBT	Polybutylene terephthalate
Back panel	AW-5754 H12 / H22	Aluminum, coated
Side panel	1.0330	Steel, coated
Base	AlSi12Cu1	Aluminum, coated
Enclosure	PBT	Polybutylene terephthalate
	PP	polypropylene

Front foils	PET	Poly(ethylene terephthalate), mat
OMNIS sample rack	PP	Polypropylene
	AlMg3	Aluminum, anodized

IP degree of protection

OMNIS Sample Robot NIR	IP 20
OMNIS sample rack	IP 40

10.5 Connectors

Energy supply		via power connection
Socket		IEC 60320, type C14, 10 A
Power cord		
Length	max. 2 m	
Number of conductors	3	with protective ground
Conductor cross-section	min. 0.75 mm^2 / 18 AWG	
Plug		
Instrument side		IEC 60320, type C13, 10 A
Building side		country-specific
MDL	Metrohm Device Link	4 connectors
Ethernet	LAN	Local Area Network
Type	Ethernet CAT 6	
Socket	RJ45	shielded
Cable type	min. F/FTP	shielded
Cable length	max. 10 m	

Contacts

OMNIS Sample Robot NIR	4	Contact surfaces for the OMNIS sample rack
OMNIS sample rack	4	Spring contacts

10.6 Different specifications

Status display	LED	multi-colored
Noise pressure level	< 60 dB	

10.7 Sample handling specifications

Robot arm

Sample load	max. 370 g
Speed	15–75 mm/s

Gripper type with beaker diameter

Area	8–28 mm	from Metrohm accessories

Rack positions

OMNIS Sample Robot S – NIR	1
OMNIS Sample Robot M – NIR	1–3

OMNIS sample rack (accessory)

Ø/use	*Sample positions*	*Article number*
8 mm / liquid samples	77	6.02041.080
15 mm / solid samples	77	6.02041.090
19 mm / solid samples	50	6.02041.100
22 mm / solid samples	50	6.02041.110
22 mm / solid samples	50	6.02041.130 for sample glass 6 mL with aluminum septum cap (from OMNIS Software version 4.4)
28 mm / solid samples	27	6.02041.120