872 Extension Modul

Sample Prep – 2.872.0050

Manual
8.872.8002EN

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03.2008 zst

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Documentation in additional languages can be found on *http://products.metrohm.com* under **Literature/Technical documentation**.

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1 Introduction

1.1 Instrument description

Existing 850 Professional IC instruments can be expanded to include additional functions with extension modules. Every 850 Professional IC instrument can be supplemented with up to 3 extension modules.

With the **872 Extension Modul – Sample Prep**, an 850 Professional IC instrument can be extended to include additional sample preparation possibilities. For example, this makes it possible also to have inline dialysis in AnCat systems (2.850.30x0) or to prepare samples with an anion high pressure gradient system (2.850.2220).

The extension module is operated with **MagIC Net** software, just like the IC instrument. When it is connected to a 850 Professional IC instrument, **MagIC Net** recognizes the extension module automatically and checks its functional capability. It controls and monitors the IC instrument with extension module, evaluates the measured data and administers it in a database.

The **872 Extension Modul – Sample Prep** comprises the following components:

Peristaltic pump

Peristaltic pumps are used for pumping sample and auxiliary solutions. They can rotate in both directions.

Switching valve

The switching valve corresponds in its design to the injection valve that is utilized in the models of the 850 IC Professional series. It can however also be utilized with sample preparation and then it acts as a switcher between two different flows, e.g. in the sample dilution for switching between sample dilution and direct injection.

1.2 About the documentation

1.2.1 Content and scope

This document describes the **872 Extension Modul – Sample Prep**, its assembly and connection to the IC instrument, as well as the installation, operation and maintenance of the individual components. Technical data, troubleshooting and information concerning scope of delivery and optional accessories makes up the rest of the manual.

This document does not on the other hand describe the functions of the IC instrument – extension module unit, nor does it describe the capillary connections that proceed from the extension module. For this purpose, please refer to the manual for the IC instrument and that for the sample processor.

Additional information concerning the configuration of MagIC Net can be found on the online help for MagIC Net.

1.2.2 Symbols and conventions

The following symbols and styles are used in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the instrument part in the figure.
1	**Instruction step** Carry out these steps in the sequence shown.
	**Warning** This symbol draws attention to a possible life hazard or risk of injury.
	**Warning** This symbol draws attention to a possible hazard due to electrical current.
	**Warning** This symbol draws attention to a possible hazard due to heat or hot instrument parts.
	**Warning** This symbol draws attention to a possible biological hazard.

	**Caution** This symbol draws attention to a possible damage of instruments or instrument parts.
	**Note** This symbol marks additional information and tips.

1.3 Safety instructions

1.3.1 General notes on safety

Warning

This instrument may only be operated in accordance with the specifications in this documentation.

This instrument has left the factory in a flawless state in terms of technical safety. To maintain this state and ensure non-hazardous operation of the instrument, the following instructions must be observed carefully.

1.3.2 Electrical safety

The electrical safety when working with the instrument is ensured as part of the international standard IEC 61010.

Warning

Only personnel qualified by Metrohm are authorized to carry out service work on electronic components.

Warning

Never open the housing of the instrument. The instrument could be damaged by this. There is also a risk of serious injury if live components are touched.

There are no parts inside the housing which can be serviced or replaced by the user.

Mains voltage

Warning

An incorrect mains voltage can damage the instrument.

Only operate this instrument with a mains voltage specified for it (see rear panel of the instrument).

Protection against electrostatic charges

Warning

Electronic components are sensitive to electrostatic charges and can be destroyed by discharges.

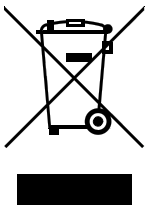
Always pull the mains cable out of the mains connection socket before connecting or disconnecting electrical appliances on the rear panel of the instrument.

1.3.3 Working with liquids

Caution

Periodically check all system connections for leaks. Observe the relevant regulations in respect to working with flammable and/or toxic fluids and their disposal.

1.3.4 Recycling and disposal



This product is covered by European Directive 2002/96/EC, WEEE – Waste from Electrical and Electronic Equipment.

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

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

2 Overview of the instrument

2.1 Front

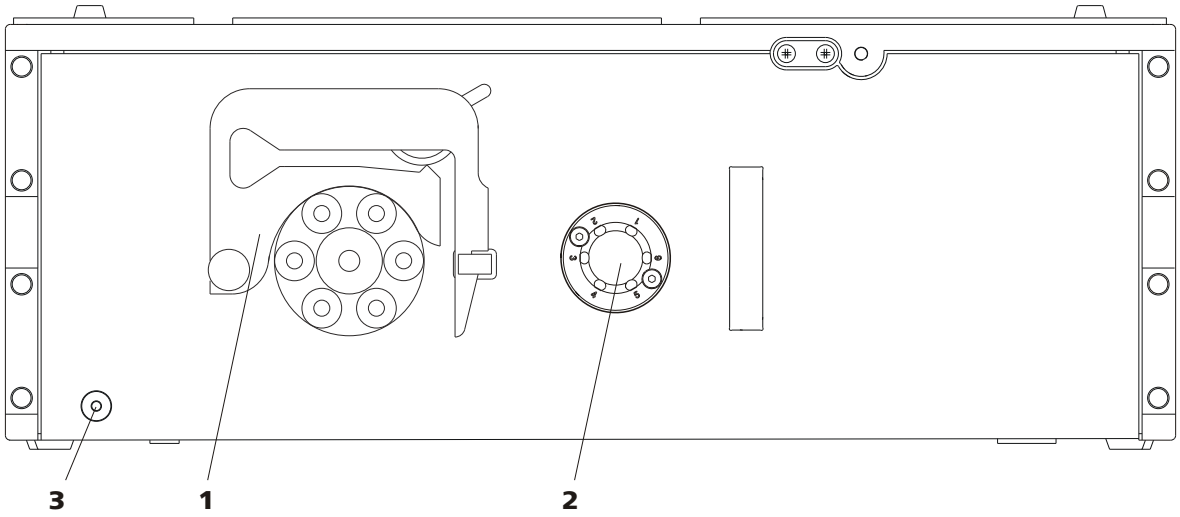


Figure 1 Front of 872 Extension Modul – Sample Prep

1 Peristaltic pump	**2 Switching valve**
3 Standby indicator	

2.2 Rear

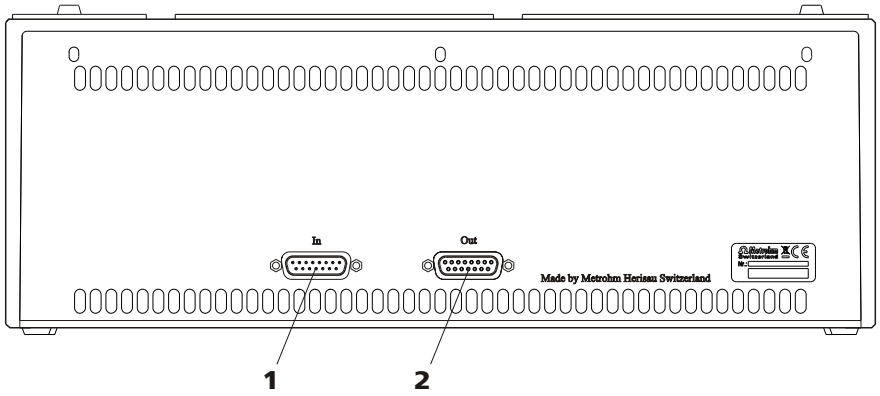


Figure 2 Rear of 872 Extension Modul – Sample Prep

1 Connector In
To connect the extension module to the IC instrument or to a previous extension module.

2 Connector Out
To connect an additional extension module.

3 Installation

3.1 About this chapter

The *Installation* chapter contains

- this overview
- a general description of mounting and connection of IC instrument and extension module.
- a brief set of instructions for the installation of the 872 Extension Modul Sample Prep *(see Chapter 3.3, page 7)*. At each step you will find cross-references to more detailed installation instructions for individual components, should you should require such aids.
- an installation diagram *(see Chapter 3.4, page 8)* which displays an example for a possible installation.
- several chapters with extensive installation instructions for all components.

3.2 Extension Module and 850 Professional IC instrument

The extension modules are fitted directly to the 850 Professional IC instrument and connected with it via 6.2156.060 connection cable. Extension modules have no power supply of their own, but rather draw the electricity they require from the instrument with which they are connected.

Extension modules can be mounted above (between instrument and covering plate) or below (between instrument and base tray) the 850 Professional IC instrument or set up next to the instrument with separate (to be ordered separately) 6.2061.110 base tray 6.2061.100 and covering plate .

Up to three extension modules can be connected to a 850 Professional IC instrument. The following limitation is to be taken into account when doing so: the 850 Professional IC instrument and its extension modules may not contain more than 4 identical components, i.e. a maximum of 4 high pressure pumps, a maximum of 4 peristaltic pumps, a maximum of 4 injection valves, a maximum of 4 suppressors (MSM, incl. SPM), but only a maximum of 3 degassers and a maximum of 3 CO_2 suppressors (MCS).

Note

If all 4 high pressure pumps are being used at once, then not all of them are permitted to run at maximum flow for long periods.

Position the extension module in such a way that the capillary connections can be kept as short as possible. If several extension modules are utilized, then they should all be installed in the same location, either above or below. If this is not possible, then the extension modules that are located at greater distances from one another must be connected with one another by means of the longer 6.2156.070 connection cable (available as optional accessory).

3.3 Installation overview

Installing 872 Extension Modul – Sample Prep

1 Supplementing 850 Professional IC instrument with extension module

See Chapter 3.5, page 9

- Prepare IC instrument.
- Mount extension module between base tray and IC instrument *(see Chapter 3.5.2, page 9)*,
  or
  mount extension module between covering plate and IC instrument *(see Chapter 3.5.3, page 11)*.

2 Connecting extension module

See Chapter 3.6.1, page 12

- Connect extension module to the IC instrument.
- Restore any connections that were undone during the preparation stage to the IC instrument.

3 Connecting sample channel

- Install peristaltic pump *(see Chapter 3.7.2, page 14)*.
- Connect switching valve *(see Chapter 3.8, page 18)*.

4 Putting extension module into operation

See Chapter 4, page 20

3.4 Installation diagram

The peristaltic pump and the switching valve of the 872 Extension Modul Sample Prep can be installed in different ways, depending on the application. *Illustration 3: Installation diagram – dialysis* shows in exemplary manner how the peristaltic pump of the extension module can be utilized for pumping the acceptor solution during dialysis.

The arrangement of the modules in the diagram corresponds to the front view of the extension module. Fluid container, dialysis cell, sample processor and IC instrument are not shown in the diagram.

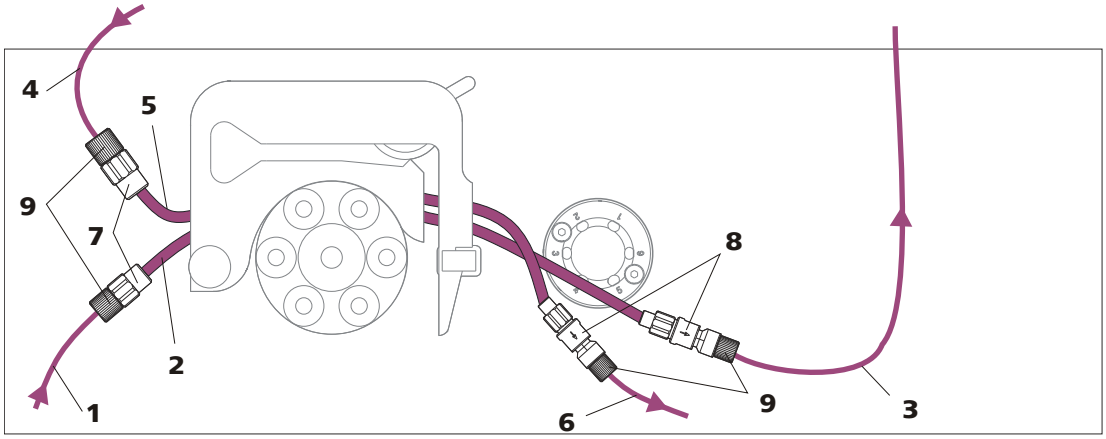


Figure 3 Installation diagram – dialysis

1 **Acceptor solution aspirating capillary 6.1803.040** From IC equipment for dialysis 6.5330.000	**2** **Pump tubing 6.1826.320** From IC equipment for dialysis 6.5330.000
3 **PTFE connection capillary 6.1803.040** Connection peristaltic pump – dialysis cell, from IC equipment for dialysis 6.5330.000	**4** **PTFE connection capillary 6.1803.040** Connection injection valve – peristaltic pump, from IC equipment for dialysis 6.5330.000
5 **Pump tubing 6.1826.320** From IC equipment for dialysis 6.5330.000	**6** **PTFE connection capillary 6.1803.040** Connection peristaltic pump – waste container, from IC equipment for dialysis 6.5330.000
7 **Tubing olive 6.2744.034**	**8** **Pump tubing connection with filter 6.2744.180**
9 **PEEK pressure screw 6.2744.070**	

3.5 Mounting the extension module

Depending on their utilization, extension modules can be mounted either on (between IC instrument and covering plate) or under (between IC instrument and base tray) the IC instrument. The covering plate or the base tray must be dismounted for this purpose.

As an alternative, an extension module can also be set up next to the 850 Professional IC instrument. We suggest in such cases that the extension module be supplemented with its own base tray and covering plate. Base tray (6.2061.110) and covering plate (6.2061.100) can be ordered as additional options.

3.5.1 Preparing IC instrument

If the IC instrument was already being used before an extension module is to be installed, then the following preparation work must be carried out:

1 Remove bottles and all other items standing on the covering plate from the covering plate.

2 Switch off the instrument and disconnect from the mains supply.

3 Undo all cable connections:

- Mains cable,
- MSB cable,
- USB cable.

4 Unplug leak sensor.

5 Disconnect drainage tubing from the instrument.

6 Disconnect detector cable and remove detector(s) from the instrument.

3.5.2 Mounting the extension module under IC instrument

Note

Before you begin make sure that the preparation work *(see Chapter 3.5.1, page 9)* has all been carried out.

1 Tilt the instrument sideways and lay it down flat.

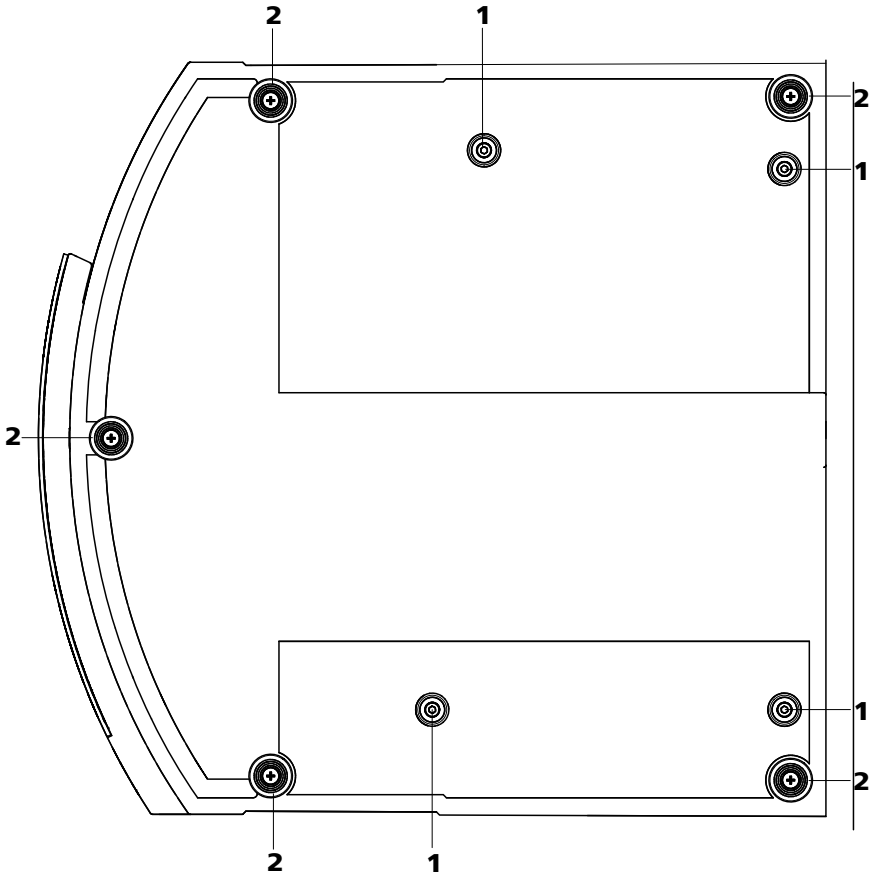


Figure 4 Base tray from below

1 Cylinder screws With washer.	**2 Rubber feet**

2 Dismounting base tray

- Undo the cylinder screws *(4-**1**)* with a 6.2621.100 3 mm hexagon key.
- Remove base tray.

3 Mounting extension module on the base tray

- Place the extension module onto the base tray and fasten with the cylinder screws *(4-**1**)*.
- Set the extension module with the base plate back up.
- Place the IC instrument onto the extension module.

3.5.3 Mounting the extension module on IC instrument

Note

Before you begin make sure that the preparation work *(see Chapter 3.5.1, page 9)* has all been carried out.

Dismounting covering plate

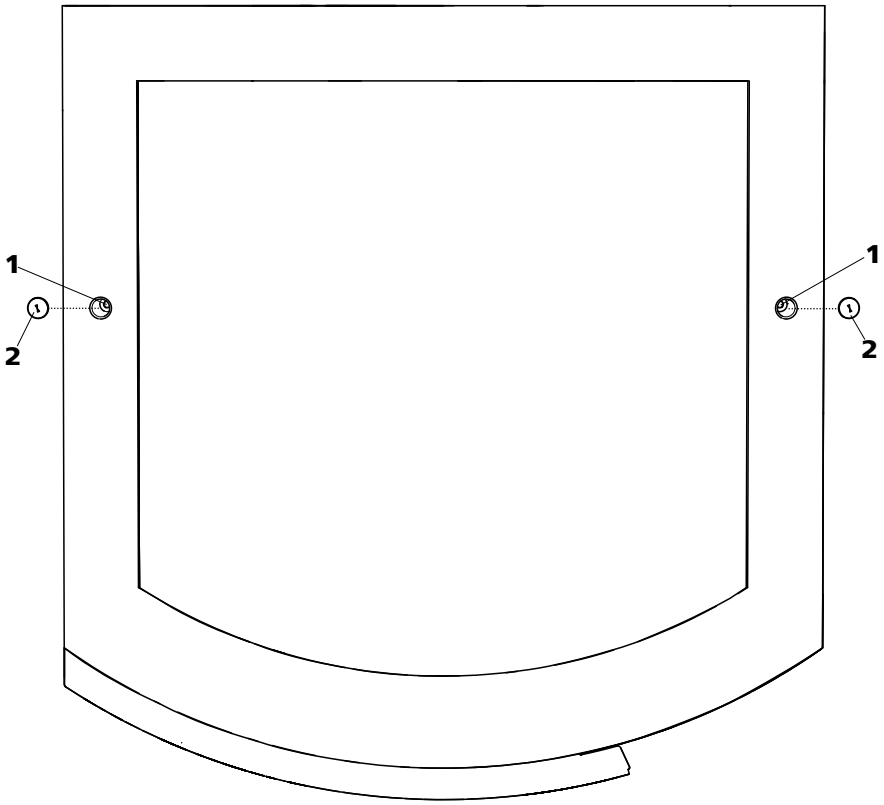


Figure 5 Covering plate from above

1 Cylinder screws	**2 Covering stoppers**

1 Dismounting covering plate

- Remove covering stoppers *(5-**2**)*.
- Undo the cylinder screws *(5-**1**)* with a 6.2621.100 3 mm hexagon key.
- Remove covering plate.

2 Mounting extension module

Place the extension module onto the IC instrument.

3 **Mounting covering plate**

- Place covering plate on the extension module.
- Insert the cylinder screws *(5-**1**)* and screw tight with the 3 mm hexagon key.
- Insert covering stoppers *(5-**2**)*.

3.6 Connecting the extension module

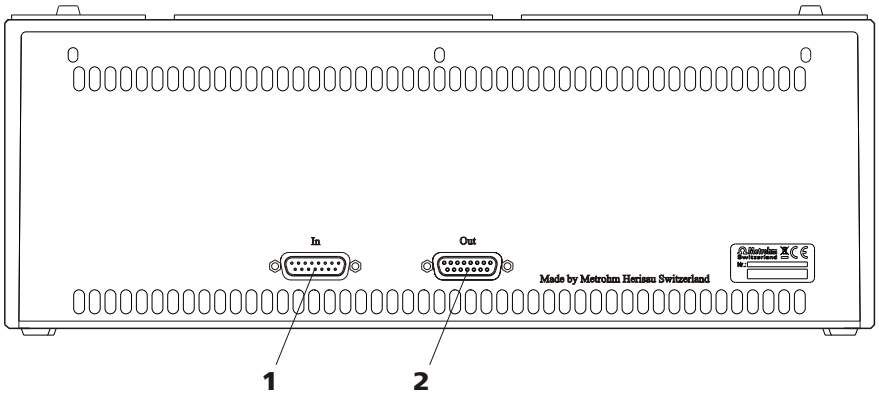


Figure 6 Rear of the instrument

1 **Connector In**
To connect the extension module to the IC instrument or to a previous extension module.

2 **Connector Out**
To connect an additional extension module.

3.6.1 Connecting the extension module

Caution

The 850 Professional IC instrument **must** be **switched off** before the extension modules are connected!

Connecting the extension module to the IC instrument

1 Plug cable 6.2156.060 into the connector **In** *(6-**1**)* of the extension module and screw it tight.

2 Plug the other end of the cable into the **Extension module** connector of the IC instrument and screw it tight.

Only one extension module can be connected directly to the IC instrument. The second extension module must be connected to the first one and the third has to be connected to the second one.

Connecting extension module to another extension module

1 Plug cable 6.2156.060 or a longer cable 6.2156.070 (optional accessory) into the connector **In** *(6-**1**)* of the second extension module and screw it tight.

2 Plug the other end of the cable into the **Out** *(6-**2**)* connector of the first extension module and screw it tight.

3.6.2 Restoring connections to the IC instrument

For more detailed instructions, refer to the manual for the IC instrument.

1 Insert detector again and connect it.

2 Reconnect leak sensor.

3 Reconnect drainage tubings.

4 Restore all cable connections:

- USB cable,
- MSB cable,
- Mains cable.

3.7 Peristaltic pump

3.7.1 Principle of the peristaltic pump

The Peristaltic pump is used for pumping sample and auxiliary solutions. It can rotate in both directions.

The peristaltic pump pumps liquids according to the principle of displacement. The pump tubing is clamped between the rollers *(7-**3**)* and the tubing cartridge *(7-**5**)*. During operation, the peristaltic pump drive rotates the roller hub *(7-**2**)*, so that the rollers *(7-**3**)* push the liquid forward in the pump tubing.

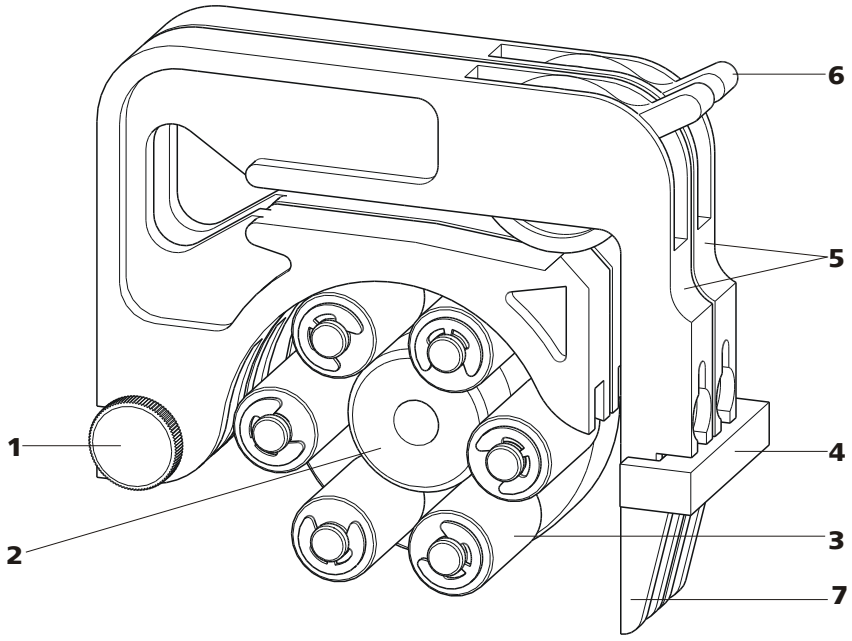


Figure 7 Peristaltic pump

1	**Knurled screw in the mounting pin**	**2**	**Roller hub**
3	**Rollers**	**4**	**Cartridge holder**
5	**Tubing cartridges 6.2755.000**	**6**	**Contact pressure lever**
7	**Snap-action lever**		

3.7.2 Installing the peristaltic pump

Note

Depending on the application of the peristaltic pump, either a 6.2744.180 pump tubing connection **with** filter or a 6.2744.160 pump tubing connection **without** filter can be used on the pressure side.

For pumping the auxiliary solutions to the MSM or to the SPM, a 6.2744.180 pump tubing connection **with** filter **must** be used.

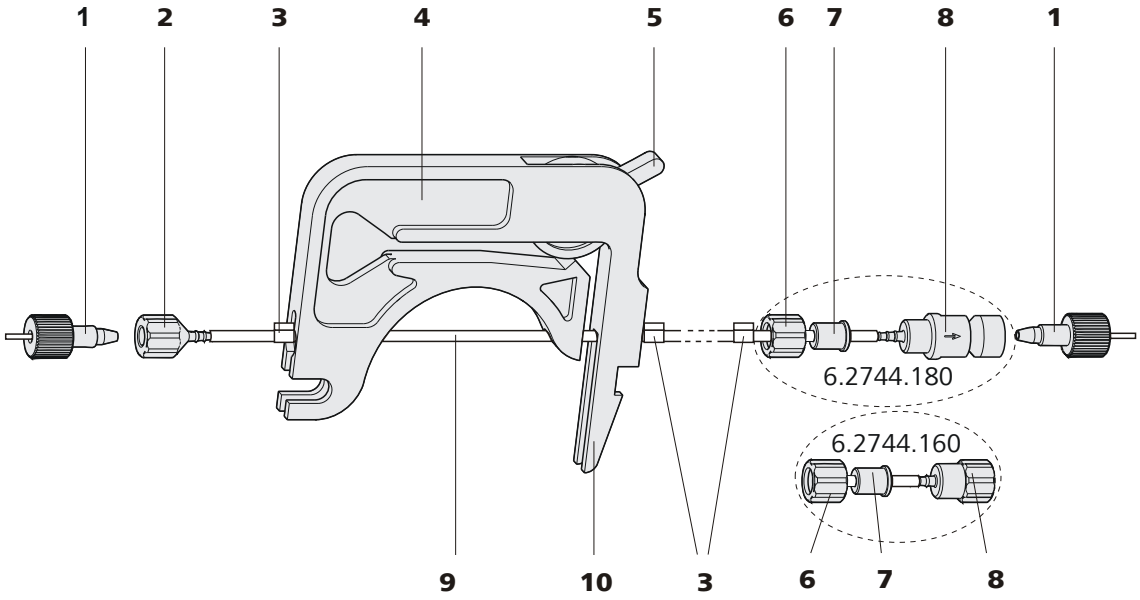


Figure 8 Installing the pump tubing

1	**PEEK pressure screw (6.2744.070)**	**2**	**Tubing olive (6.2744.034)**
3	**Stopper** The colors of the stopper indicate the inner diameter of the pump tubing.	**4**	**Tubing cartridge (6.2755.000)**
5	**Contact pressure lever**	**6**	**Union nut**
7	**Adapter**	**8**	**Tubing olive**
9	**Pump tubing (6.1826.xx0)**	**10**	**Snap-action lever**

Mount the pump tubing as follows:

1 Removing the tubing cartridge

Release the tubing cartridge from the cartridge holder by pressing the snap-action lever and unhooking from the mounting pin .

2 Connecting the aspiration side

Place a 6.2744.034 tubing olive *(8-**2**)* on the aspiration side of the pump tubing.

3 Connecting the pressure side

Note

Depending on the use of the peristaltic pump, on the pressure side you can either:

- **Case A:**connect a 6.2744.180 pump tubing connection **with filter** *(see Figure 9, page 16)* or
- **Case B:**connect a 6.2744.160 pump tubing connection **without filter** *(see Figure 10, page 16)*.

Case A: 6.2744.180 Pump tubing connection with filter:

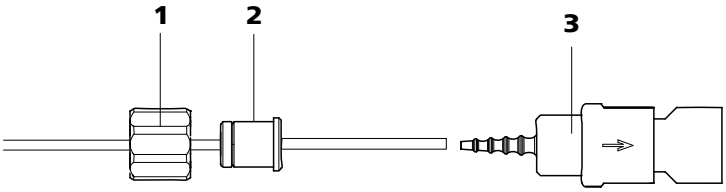


Figure 9 Install pump tubing with filter

1 Union nut	**2 Adapter**
3 Tubing olive with filter holder	

- Slide the union nut *(9-**1**)* onto the pump tubing.
- Select a suitable adapter *(9-**2**)* and slide it onto the pump tubing. The type of adapter depends on the pump tubing *(see Table 1, page 17)*.
- Place tubing olive with filter holder *(9-**3**)* onto the pump tubing.
- Screw union nut *(9-**1**)* onto the tubing olive *(9-**3**)*.

or

Case B: 6.2744.160 Pump tubing connection without filter:

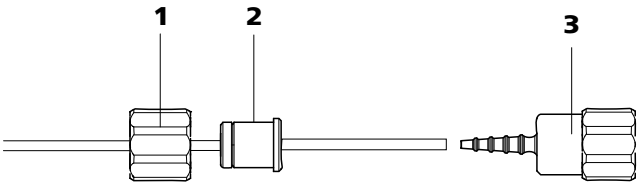


Figure 10 Install pump tubing without filter

1 Union nut	**2 Adapter**
3 Tubing olive	

- Slide the union nut *(10-**1**)* onto the pump tubing.

- Select a suitable adapter *(10-**2**)* and slide it onto the pump tubing. The type of adapter depends on the pump tubing *(see Table 1, page 17)*
- Place tubing olive *(10-**3**)* onto the pump tubing.
- Screw union nut *(10-**1**)* onto the tubing olive *(10-**3**)*.

4 Inserting the pump tubing

- Press the contact pressure lever all the way down.
- Place the pump tubing in the tubing cartridge. The stoppers *(8-**3**)* must snap into the corresponding holders of the tubing cartridge.

5 Inserting the tubing cartridge

- Hang the tubing cartridge in the mounting pin and press in the cartridge holder until the snap-action lever snaps in.

6 Connecting the capillaries

- Screw the respective capillaries tightly to the two olives with PEEK pressure screws *(8-**1**)*.

Table 1 Pump tubings and suitable adapters

Pump tubing	Adapter
6.1826.020 (blue/blue)	
6.1826.310 (orange/green)	
6.1826.320 (orange/yellow)	
6.1826.330 (orange/white)	
6.1826.340 (black/black)	
6.1826.360 (white/white)	
6.1826.380 (grey/grey)	
6.1826.390 (yellow/yellow)	

Setting the flow rate

The contact pressure lever of the tubing cartridge must be adjusted in order to regulate the flow rate. Proceed as follows:

1 Setting the contact pressure

- Fully loosen the contact pressure lever *(8-**5**)*, i.e. press it all the way down.
- Switch on the peristaltic pump.
- Raise the contact pressure lever one step at a time until liquid flows.
- When liquid starts flowing, raise the contact pressure lever by an additional 2 ratchet increments.

The contact pressure is now set optimally.

The delivery rate depends not only on the correct contact pressure but also on the interior diameter of the pump tubing and the rotational speed of the drive.

Note

Pump tubing is consumable material. The service life of the pump tubing depends on the contact pressure amongst other factors.

3.8 Switching valve

3.8.1 Mode of operation of the switching valve

During sample preparation, the switching valve functions as a switch between two different flows.

Connectors

The switching valve has (just like the injection valve) six connectors, which can be connected with one another as required.

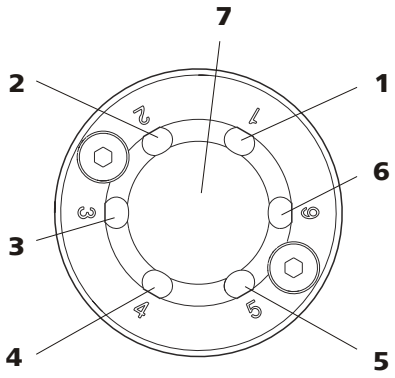


Figure 11 Switching valve – connectors

1	**Connector 1**	**2**	**Connector 2**
3	**Connector 3**	**4**	**Connector 4**
5	**Connector 5**	**6**	**Connector 6**
7	**Switching valve**		

Valve positions

The injection valve *(11-**7**)* can adopt two valve positions - **Fill** and **Inject**. Switching back and forth causes two respectively different connectors to be connected with one another. The following graphic provides a schematic display of the flow paths of the two valve positions.

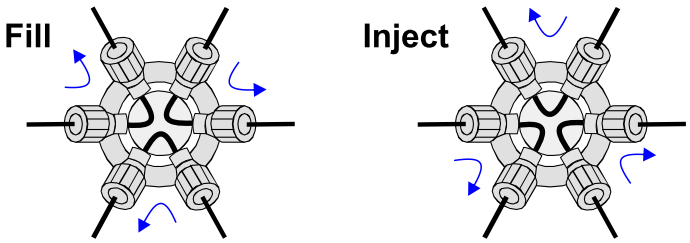


Figure 12 Switching valve – valve positions

Filling In the **Filling** position, the connectors 2 and 3, 4 and 5, and 6 and 1 are connected with one another.

Injecting In the **Injecting** position, the connectors 1 and 2, 3 and 4, and 5 and 6 are connected with one another.

3.8.2 Connecting switching valve

Connecting switching valve

1 Connect capillaries with 6.2744.010 PEEK pressure screws.

4 Start-up

The extension module is put into operation together with the IC instrument.

Putting IC instrument into operation with extension module

1. Start MagIC Net.
2. Connect IC instrument to PC and switch on.

   The extension module is recognized automatically by MagIC Net.

Additional information can be found in the *Start-up* chapter in the manual for the IC instrument as well as in the MagIC Net online Help.

5 Handling and maintenance

5.1 Door

Caution

The door is made of PMMA (polymethylmetacrylate). It must never be cleaned with abrasive media or solvents.

Caution

Never use the door as a handle.

5.2 Peristaltic pump

5.2.1 Operation

The pumping capacity of the peristaltic pump depends on the drive speed (set via software), the contact pressure and, above all, the internal diameter of the pump tubing. Depending on the application, different pump tubes are used.

Caution

The service life of the pump tubing also depends on the contact pressure. Therefore fully lift the tubing cartridges by loosening the snap-action lever *(8-**10**)* on the right-hand side if the peristaltic pump is to be turned off for a longer period. Once set, the contact pressure remains unaffected.

Caution

The pump tubing 6.1826.xxx consists of PVC or PP and therefore must not be used for rinsing with solutions containing acetone. In this case, use other pump tubing or use another pump for rinsing.

5.2.2 Maintenance

5.2.2.1 Pump tubing

The pump tubing used in the peristaltic pump is a consumable whose service life is restricted.

The LFL pump tubing with 3 stoppers is stretched in the tubing cartridge in such a way that it comes to rest between two stoppers. This results in two possible positions for the tubing cartridge. If the pump tubing should exhibit clear signs of wear, then this can be stretched a second time, in the respective alternate position.

Therefore replace the pump tubing periodically, or when used permanently approx. every 4 weeks .

Selecting the pump tubing

The pump tubing differs in material, diameter and hence also pumping capacity. Depending on the application, different pump tubings are used.

The following table provides information on the properties and use of the pump tubing:

Table 2 Pump tubing

Order number	Name	Material	Inner diameter	Use
6.1826.020	Pump tubing (blue/ blue), 2-stopper	PVC (Tygon ST)	1.65 mm	Pump tubing for online IC instruments and automation in voltammetry
6.1826.310	Pump tubing LFL (orange/green), 3-stopper	PVC (Tygon)	0.38 mm	Pump tubing for bromate determination using the triiodide method.
6.1826.320	Pump tubing LFL (orange/yellow), 3-stopper	PVC (Tygon)	0.48 mm	For suppressor solutions, acceptor solutions for inline dialysis and for inline ultrafiltration.
6.1826.330	Pump tubing LFL (orange/white), 3-stopper	PVC (Tygon)	0.64 mm	No special applications.
6.1826.340	Pump tubing LFL (black/black), 3-stopper	PVC (Tygon)	0.76 mm	For the sample solution in inline dialysis.

Order number	Name	Material	Inner diameter	Use
6.1826.360	Pump tubing LFL (white/white), 3-stopper	PVC (Tygon)	1.02 mm	For sample transfer.
6.1826.380	Pump tubing LFL (gray/gray), 3-stopper	PVC (Tygon)	1.25 mm	For inline sample dilution.
6.1826.390	Pump tubing LFL (yellow/yellow), 3-stopper	PVC (Tygon)	1.37 mm	For the sample solution in inline ultrafiltration.

5.2.2.2 Pump tubing connector with filter

The 6.2821.130 filters *(13-**2**)* should be changed every 3 months, more frequently at higher backpressure.

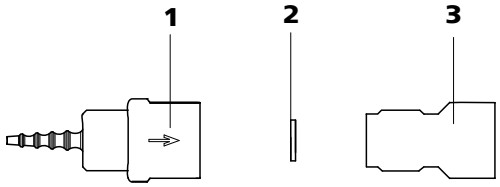


Figure 13 Pump tubing connection – changing the filter

1 Tubing olive

2 Filter 6.2821.130
Packaging contains 10 items.

3 Filter screw

Replacing the filter

1 Unscrewing the filter screw

- Unscrew the filter screw *(13-**3**)* out of the tubing olive *(13-**1**)*.

2 Replacing the filter

- Remove old filter *(13-**2**)*.
- Place new filter *(13-**2**)* flat in the tubing olive *(13-**1**)*.

3 Mounting the filter screw

- Screw filter screw *(13-**3**)* back into the tubing olive *(13-**1**)*.

6 Troubleshooting

6.1 Problems and their solutions

Problem	Cause	Remedy
Peristaltic pump – insufficient or no delivery rate	*Peristaltic pump – contact pressure too weak.*	Correctly set contact pressure *(see "Setting the flow rate", page 18)*.
	Peristaltic pump – filter blocked.	Replacing filter *(see Chapter 5.2.2.2, page 23)*.
	Peristaltic pump – pump tubing defective.	Replace pump tubing *(see Chapter 5.2.2.1, page 22)*.

7 Technical specifications

7.1 Reference conditions

The technical data listed in this chapter refers to the following reference conditions:

Ambient temperature	+25 °C (± 3 °C)
Instrument status	> 40 minutes in operation (equilibrated)

7.2 Instrument

IC system	Metal-free IC system
Material	Painted polyurethane hard foam without CFCs, fire class V0
Operating pressure range	▪ 0…50 MPa (500 bar) high pressure pump ▪ 0…35 MPa (350 bar) standard-PEEK system
Intelligent components	iPump, MagIC Net

7.3 Ambient conditions

Operation	
Ambient temperature	+5…+45 °C
Humidity	20…80 % relative humidity
Storage	
Ambient temperature	–20…+70 °C
Transport	
Ambient temperature	–40…+70 °C

7.4 Housing

Dimensions	
Width	365 mm
Height	131 mm
Depth	380 mm
Material of base tray, housing and covering plate	Polyurethane hard foam (PUR) with flame retardation for fire class UL94V0, CFC-free, painted

7.5 Peristaltic pump

Type	2-channel peristaltic pump
Shift direction	Counterclockwise/Clockwise rotation
Rotational speed	0…42 rpm in 7 stages at 6 rpm.
Pumping properties	0.3 mL/min at 18 rpm; with standard pump tubing 6.1826.320
Material of pump tubing	Recommended: Tygon Long Flex Life

7.6 Switching valve

Actuator time	Typ.100 ms
Max. operating pressure	35 MPa (350 bar)
Material	PEEK

7.7 Interfaces

Auxiliary	1 DSUB plug 15-pole (female)
Analog Output	Analog Output (optional)

7.8 Safety specification

Design / testing

- EN/IEC 61010-1: 2001
- Protection class III

7.9 Electromagnetic compatibility (EMC)

Emission

- EN/IEC 61326-1: 2006
- EN/IEC 61000-6-3: 2004
- EN 55022 / CISPR 22: 2006

Immunity

- EN/IEC 61326-1: 2006
- EN/IEC 61000-6-2: 2005
- EN/IEC 61000-4-2: 2001
- EN/IEC 61000-4-3: 2002
- EN/IEC 61000-4-4: 2004

7.10 Weight

1.872.0050	5.6 kg (without accessories)

8 Conformity and warranty

8.1 Declaration of Conformity

This is to certify the conformity to the standard specifications for electrical appliances and accessories, as well as to the standard specifications for security and to system validation issued by the manufacturing company.

Name of commodity

872 Extension Module

The 872 Extension Module is an expansion tool for upgrading all 850 Professional IC instruments.

This instrument has been built and has undergone final type testing according to the standards:

Electromagnetic compatibility

Emission:	EN/IEC 61326-1: 2006, EN/IEC 61000-6-3: 2004, EN 55022 / CISPR 22: 2006
Immunity:	EN/IEC 61326-1: 2006, EN/IEC 61000-6-2: 2005, EN/IEC 61000-4-2: 2001, EN/IEC 61000-4-3: 2002, EN/IEC 61000-4-4: 2004

Safety specifications

EN/IEC 61010-1: 2001, protection class III

CE

This instrument meets the requirements of the CE mark as contained in the EU directives 2006/95/EC (LVD), 2004/108/EC (EMC). It fulfils the following specifications:

EN 61326-1: 2006	Electrical equipment for measurement, control and laboratory use – EMC requirements
EN 61010-1: 2001	Safety requirements for electrical equipment for measurement, control and laboratory use

Manufacturer

Metrohm Ltd., CH-9101 Herisau/Switzerland

Metrohm Ltd. is holder of the SQS certificate ISO 9001:2000 Quality management system for development, production and sales of instruments and accessories for ion analysis.

Herisau, 31 March, 2008

D. Strohm

Vice President, Head of R&D

Ch. Buchmann

Vice President, Head of Production

Responsible for Quality Assurance

8.2 Quality Management Principles

Metrohm Ltd. holds the ISO 9001:2000 Certificate, registration number 10872-02, issued by SQS (Swiss Association for Quality and Management Systems). Internal and external audits are carried out periodically to assure that the standards defined by Metrohm's QM Manual are maintained.

The steps involved in the design, manufacture and servicing of instruments are fully documented and the resulting reports are archived for ten years. The development of software for PCs and instruments is also duly documented and the documents and source codes are archived. Both remain the possession of Metrohm. A non-disclosure agreement may be asked to be provided by those requiring access to them.

The implementation of the ISO 9001:2000 quality management system is described in Metrohm's QM Manual, which comprises detailed instructions on the following fields of activity:

Instrument development

The organization of the instrument design, its planning and the intermediate controls are fully documented and traceable. Laboratory testing accompanies all phases of instrument development.

Software development

Software development occurs in terms of the software life cycle. Tests are performed to detect programming errors and to assess the program's functionality in a laboratory environment.

Components

All components used in the Metrohm instruments have to satisfy the quality standards that are defined and implemented for our products. Suppliers of components are audited by Metrohm as the need arises.

Manufacture

The measures put into practice in the production of our instruments guarantee a constant quality standard. Production planning and manufacturing procedures, maintenance of production means and testing of components, intermediate and finished products are prescribed.

Customer support and service

Customer support involves all phases of instrument acquisition and use by the customer, i.e. consulting to define the adequate equipment for the analytical problem at hand, delivery of the equipment, user manuals, training, after-sales service and processing of customer complaints. The Metrohm service organization is equipped to support customers in implementing standards such as GLP, GMP, ISO 900X, in performing Operational Qualification and Performance Verification of the system components or in carrying out the System Validation for the quantitative determination of a substance in a given matrix.

8.3 Warranty (guarantee)

Metrohm guarantees that the deliveries and services it provides are free from material, design or manufacturing errors. The warranty period is 36 months from the day of delivery; for day and night operation it is 18 months. The warranty remains valid on condition that the service is provided by an authorized Metrohm service organization.

Glass breakage is excluded from the warranty for electrodes and other glassware. The warranty for the accuracy corresponds to the technical specifications given in this manual. For components from third parties that make up a considerable part of our instrument, the manufacturer's warranty provisions apply. Warranty claims cannot be pursued if the Customer has not complied with the obligations to make payment on time.

During the warranty period Metrohm undertakes, at its own choice, to either repair at its own premises, free of charge, any instruments that can be shown to be faulty or to replace them. Transport costs are to the Customer's account.

Faults arising from circumstances that are not the responsibility of Metrohm, such as improper storage or improper use, etc. are expressly excluded from the warranty.

9 Accessories

Note

Subject to change without notice.

9.1 Scope of delivery

2.872.0050 872 Extension Modul – Sample Prep

Qty.	Order no.	Description
1	1.872.0050	**872 Extension Modul – Sample Prep**
1	6.1803.020	**PTFE capillary 0.97 mm i.d. / 5 m** For all IC instruments Material: PTFE Outer diameter (mm): 1.57 Inner diameter (mm): 0.97 Length (m): 5
1	6.1825.230	**PEEK sample loop 10 µL** For injection valve, with 2 PEEK pressure screws Material: PEEK (metal-free) Outer diameter (inches): 1/16 Volume (mL): 0.01
2	6.1826.340	**Pump tubing LFL (black/black), 3 stoppers** For the sample solution in inline dialysis

Qty.	Order no.	Description
1	6.1831.060	**PEEK capillary 0.5 mm i.d., 1 m**

For inline dialysis and for Sample Changers. For IC Dialysis Unit, IC Sample Processor, Compact IC Autosampler, IC Filtration Sample Processor, IC Dialysis Sample Processor, IC Liquid Handling Dialysis Unit

Material:	PEEK
Outer diameter (inches):	1/16
Inner diameter (mm):	0.5
Length (m):	1

1	6.1831.100	**PEEK capillary 0.25 mm i.d., 1 m**

Material:	PEEK
Outer diameter (inches):	1/16
Inner diameter (mm):	0.25
Length (m):	1

1	6.2156.060	**Cable Extension Module - Professional IC, 40 cm**

Cable connecting the Extentsion Module with the Professional IC instrument

Length (m):	0.4

1	6.2621.100	**Hexagon key 3 mm**

Hexagon key 3 mm for IC Sample Processors

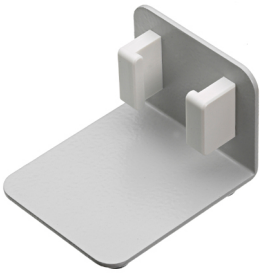
Length (mm):	73

Qty.	Order no.	Description
1	6.2744.010	**Pressure screw 5x** With UNF 10/32 connection. For the connection of PEEK capillaries Material: PEEK Length (mm): 26
1	6.2744.034	**Coupling nozzle - UNF 10/32, 2 pieces** Connection pressure screw and pump tubing. 2 pieces. For IC instruments with peristaltic pumps
2	6.2744.070	**Pressure screw short** Short version. With UNF 10/32 connection. 5 pieces. For the connection of PEEK capillaries Material: PEEK Length (mm): 21
2	6.2744.160	**Nozzle/UNF 10/32 coupling with security device** Security device for connecting pump tubing to a nozzle. Material: PEEK

Qty.	Order no.	Description	
1	8.872.8002EN	Manual for 872 Extension Module, 2.872.0050 - Sample Prep, English	

9.2 Optional accessories

2.872.0050 872 Extension Modul – Sample Prep

Order no.	Description	
6.2057.120	**Filtration cell holder** Holder for the filtration cell	
6.2057.130	**Dialysis cell holder** Holder for the dialysis cell	
6.2061.100	**Bottle holder (ProfIC)** Bottle holder to Professional IC instruments	

Order no.	Description
6.2061.110	**Tray with sensor for Professional IC Instruments**

6.2103.170	**Adaptor to Leak Sensor at Professional IC**

Adaptor to connect two leak sensors to one Professional IC instrument

6.2156.070	**Cable Extension Module - Professional IC, 1 m**

Cable connecting the Extentsion Module with the Professional IC instrument

Length (m): 1.0

6.5332.000	**IC Tubing Kit for 2. Extension Module**

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