# 816 IC Eluent Selector


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Instructions for Use
8.816.1003

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# 816 IC Eluent Selector

## Instructions for Use

8.816.1003 10.2002 / pkl

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Although all the information given in these instructions has been checked with great care, errors cannot be entirely excluded. Should you notice any mistakes please inform the author at the address given above.

# Table of Contents

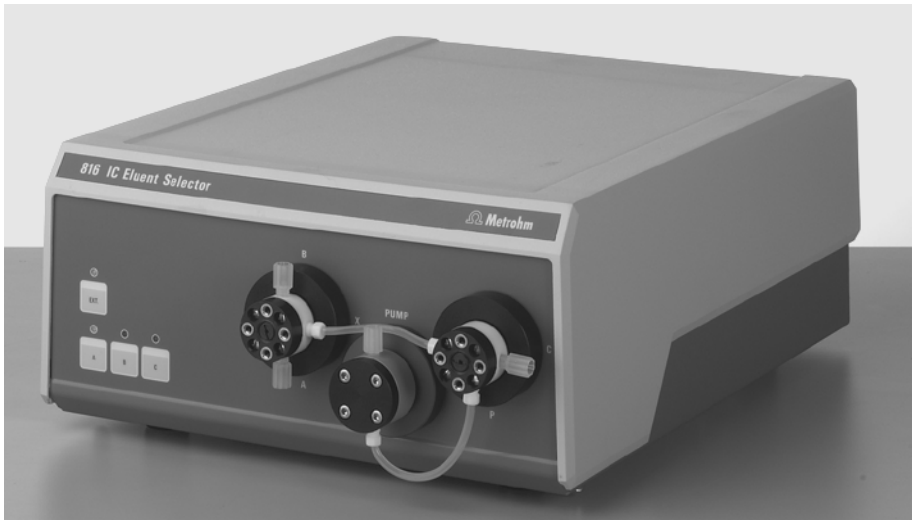
# List of illustrations

# 1 Introduction

## 1.1 Description of the instrument

The **816 IC Eluent Selector** has two 3-way valves and can be integrated in an IC system via an RS232 interface. When used in a Metrohm IC system it can be operated completely by remote control.

Up to three different eluents can be used with the 816 IC Eluent Selector. In this way the 816 IC Eluent Selector makes it easy to use step gradients in order to optimize the separating performance of your system with difficult samples. A further frequent application is its use in a 2-channel system for investigating samples which require different separating systems for their complete analysis, e.g. the determination of cations and anions in a single sample. In combination with the 2-channel version of the 812 IC Valve Unit and the 761 Compact IC with suppressor, the 816 IC Eluent Selector forms a compact IC system with which the cations and anions in a single sample can be determined.



# 1.2 Parts and controls

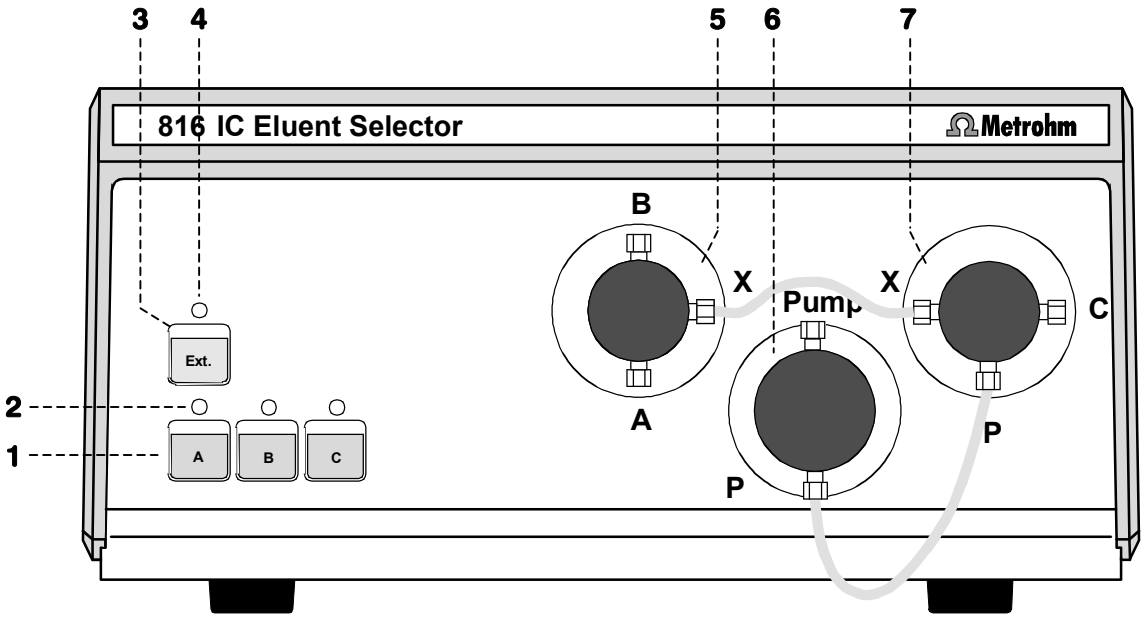



***Figure 1: Front panel of the 816 IC Eluent Selector***

| | |
|---|---|
| **Keys**<br>for manual operation of the 816 IC Eluent Selector. | **LEDs**<br>The LED shows the instrument status. |
| **1** **A, B, C**<br>These keys are only active in the manual mode. They can be used for the manual selection of the required eluent.<br>The LED **2** for the selected eluent lights up. | **2** **A, B, C**<br>The LEDs show which eluent has been selected.<br>**LED lights up:** valve is open; the particular eluent can pass through the IC Eluent Selector.<br>**LED is off:** valve is closed. |
| **3** **EXT.**<br>Switches between **external** control and **manual** control of the instrument. | **4** **EXT.**<br>The LED shows whether the instrument is under **external (LED lights up)** or **manual (LED is off)** control. |
| **5** **Valve I**<br>Switches eluents **A** and **B**. | **6** **Mixing chamber**<br>Has no function in the 816 IC Eluent Selector; the eluents simply pass through this component. |
| **7** **Valve II**<br>Switches eluent **C**. | |

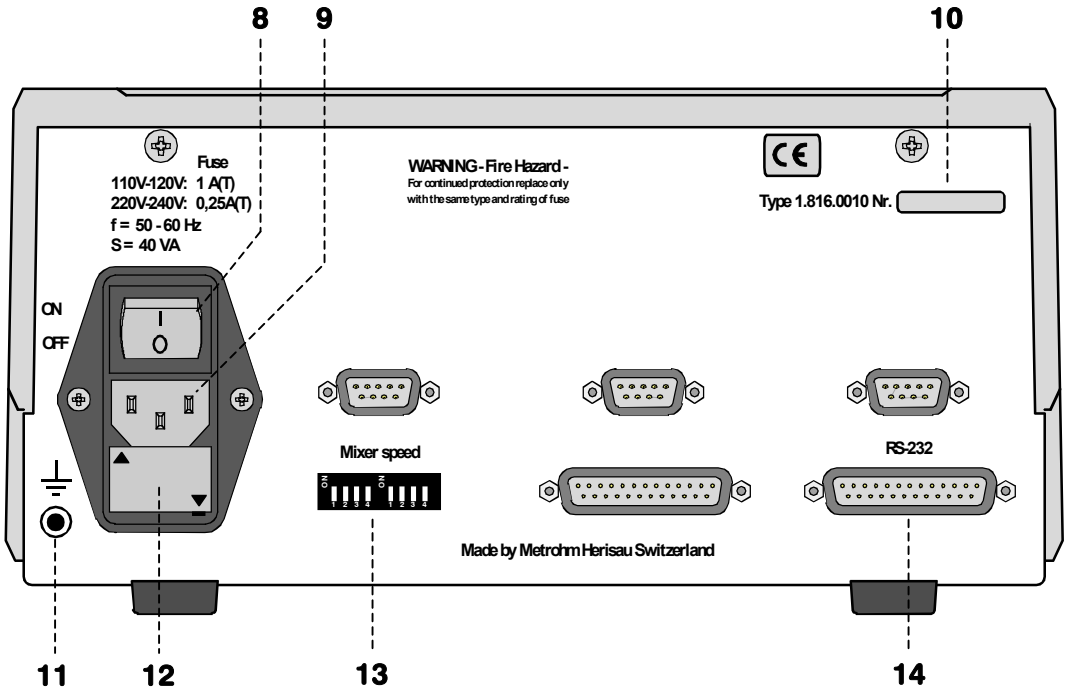



***Figure 2: Rear panel of the 816 IC Eluent Selector***

**8 Mains switch**
for switching the instrument on and off: **I = ON 0 = OFF**
Mains connection: see Section 2.2.

**9 Mains connection**
Mains connection: see Section 2.2.

**10 Model** and **serial number**

**11 Ground connection**

**12 Fuse holder**
Changing the fuses: see Section 2.2.1.

**13 Mixer speed**
Dip switch for setting the stirring rate in the mixing chamber: see Section 4.1.3. We recommend that the mixing chamber is kept switched off (all switches down).

**14 RS 232**
RS 232 interface for remote control of the 816 IC Eluent Selector: see Section 4.1.2.

# 1.3 Information about the Instructions for Use

*Please study the instructions carefully before you start to use the 816 IC Eluent Selector. The instructions contain information and warnings that must be observed by the user in order to guarantee the safe use of the instrument. Please keep these instructions near the instrument so that they are always to hand when required.*

## 1.3.1 Organization

These **8.816.1003 Instructions for Use** for the 816 IC Eluent Selector provide you with a comprehensive overview of the installation, start up, operation, troubleshooting and technical specifications of this instrument. The instructions are arranged as follows:

**Section 1 Introduction**
General description of the instrument, parts and controls, safety information

**Section 2 Installation**
Setup, mains connection, connection to the IC system, flow diagram

**Section 3 Operation**
Manual operation, remote control

**Section 4 Annex**
Technical data, standard equipment, options, warranty, declaration of conformity, index

In order to find the information you require about the 816 IC Eluent Selector you should either use the **Contents** or the **Index**.

### 1.3.2 Notation and pictograms

The following notation and pictograms (symbols) are used in these Instructions:

| | |
|---|---|
| **Program** | **Menu item, parameter or input value**<br>in the «IC Net» program |
| **<OK>** | **Button**<br>in the «IC Net» program |
| **15** | **Numbers of the parts and controls: 816** |
|  | **Danger/Warning**<br>This symbol indicates a possible risk of injury to the user and possible damage to the instrument or its components from electricity. |
|  | **Danger/Warning**<br>This symbol indicates a possible risk of injury to the user and possible damage to the instrument or its components. |
|  | **Attention**<br>This symbol indicates important information that you should read before continuing. |
|  | **Information**<br>This symbol indicates additional information and tips which may be of particular use to you. |

# 1.4 Safety information

***Warning!***
*This instrument should only be used in accordance with the information given in these installation instructions.*

## 1.4.1 Electrical safety

Electrical safety when handling the 816 IC Eluent Selector is guaranteed within the framework of the IEC 61010 Standard. The following point must be observed:

- **Mains connection**

***Mains connection*** *and checking the* ***fuses*** *must be carried out in accordance with the instructions given in Section 2.2.*

- **Opening the 816 IC Eluent Selector**

*When the 816 IC Eluent Selector is connected to the mains it must not be opened, nor should any components be removed, as otherwise you run the risk of contacting parts which are "live". Always disconnect the instrument from all voltage sources before opening it and make sure that the* ***mains cable has been removed from mains connection 9!***

- **Protection against electrostatic charges**

*Electronic components are sensitive to electrostatic charges and can be destroyed by a discharge. Before you touch any component inside the 816 IC Eluent Selector you should ground yourself and your tool by touching a grounded object (e.g. instrument housing or radiator) to eliminate any existing electrostatic charges.*

## 1.4.2 General safety rules

- **Handling solutions**

*Check all inlets and outlets for leaks at regular intervals. Observe the appropriate regulations for the handling and disposal of flammable and/or toxic solutions.*

# 2 Installation

## 2.1 Setting up the instrument

### 2.1.1 Packaging

The 816 IC Eluent Selector and the separately packed accessories are delivered in special packaging that provides excellent protection. It contains impact-absorbing plastic foam. The instrument itself is packed in a dustproof evacuated polyethylene bag. Please store this packaging in a safe place; it is the only way in which the safe transport of the instrument can be guaranteed.

### 2.1.2 Checks

Please check that the delivery is complete and undamaged immediately on receipt (compare with delivery note and list of accessories given in Section 4.2). If transport damage is evident please refer to the information given in Section 4.5.1 Warranty.

### 2.1.3 Location

Place the instrument on a suitable vibration-free laboratory bench, protected as much as possible from corrosive atmospheres and contact with chemicals.

Choose a location where the temperature is usually between +5 °C and +45 °C. The instrument should be protected against excessive variations in temperature and direct sunlight.

## 2.2 Mains connection

*Please observe the following rules when connecting the instrument to the electricity supply. If the instrument is operated with an incorrectly set mains voltage and/or an incorrect mains fuse then it represents a fire hazard!*

### 2.2.1 Setting the mains voltage

Before you switch on the 816 IC Eluent Selector for the first time please check that the mains voltage set on the instrument (see Figure 2) corresponds to your local mains voltage. If this is not the case then you must alter the mains voltage as follows:

**1 Pull out mains cable**

Remove the mains cable from mains supply connection **9** of the 816 IC Eluent Selector.

**2 Remove the fuse holder**

Use a screwdriver to loosen fuse holder **12** below the mains supply connection and remove it completely.

**3 Check the fuse**

Carefully remove the built-in fuse for the intended voltage from the fuse holder and check its specifications (the position of the fuse in the fuse holder is indicated by the white arrow beside the voltage range):

**100…120 V 1.0 A (slow blow)** Metrohm No. U.600.0016

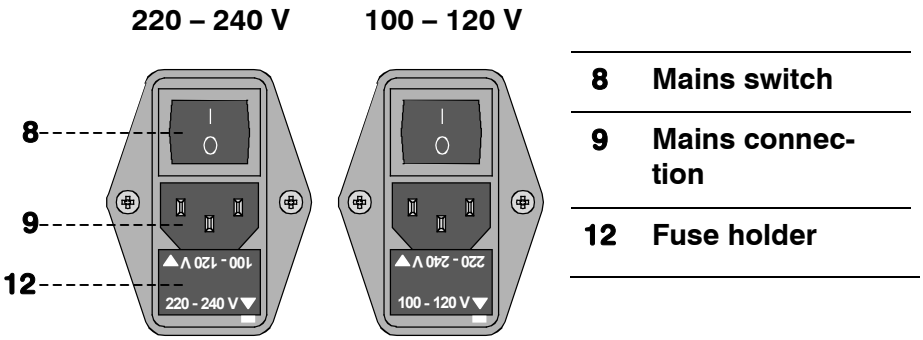
**220…240 V 0.5 A (slow blow)** Metrohm No. U.600.0013

**4 Insert fuse**

Exchange the fuse if necessary and replace it in the fuse holder.

**5 Insert fuse holder**

Depending on the required mains voltage, insert the fuse holder in the 816 IC Eluent Selector so that the correct voltage range can be read normally and the white arrow beside it points to the white bar printed below the fuse holder (see Figure 3).




| | |
|---|---|
| **8** | **Mains switch** |
| **9** | **Mains connection** |
| **12** | **Fuse holder** |

***Figure 3: Setting the mains voltage***

### 2.2.2 Fuses

The fuse holder of the IC Eluent Selector is fitted with one of the following two fuses as standard: 1.0 A/slow-blow for 100…120 V or 0.5 A/slow-blow for 220…240 V.

*Never use different fuses in the instrument from those mentioned above as otherwise there is a fire risk!*

Checking and exchanging fuses is described in Section 2.2.1.

### 2.2.3 Mains cable and mains connection

#### Mains

The instrument is supplied with one of the following mains cables:

- 6.2122.020 with SEV 12 plug (Switzerland, …)
- 6.2122.040 with CEE(7), VII plug (Germany, …)
- 6.2133.070 with NEMA 5-15 plug (USA, …)

which has three wires and is fitted with a plug with a grounding pin. If a different plug has to be used then the yellow/green wire (IEC standard) must be connected to the grounding pin (protection class I).

*Any interruption to the grounding inside or outside the instrument can represent a hazard!*

#### Mains connection

Insert the mains cable into **mains connector 9** of the 816 IC Eluent Selector.

### 2.2.4 Switching the instrument on/off

The 816 IC Eluent Selector is switched on and off with **mains switch 8**.

# 2.3 Electrical connection

## 2.3.1 Operation in a modular IC system

*Always switch off the 762 IC Interface and 816 IC Eluent Selector before connecting the two instruments.*

Use a 6.2134.080 or 6.2134.090 Cable to connect RS 232 interface **14** of the 816 IC Eluent Selector with a free RS 232 interface on the 762 IC Interface according to the following diagram.

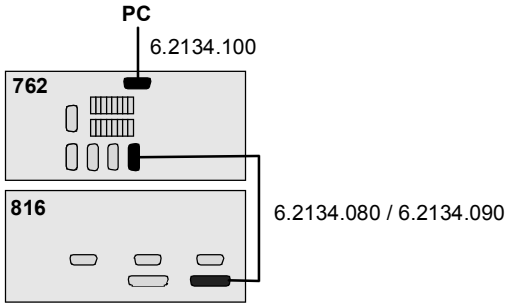



***Figure 4: Connecting the 816 IC Eluent Selector to 762 IC Interface***

## 2.3.2 Operation with a 761 Compact IC

*Always switch off the 816 IC Eluent Selector and PC before connecting the two instruments.*

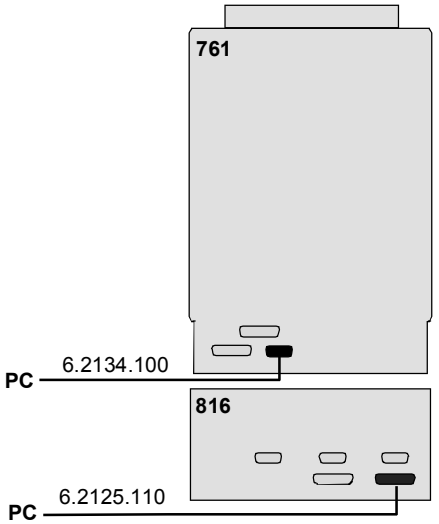



***Figure 5: Connecting the 816 IC Eluent Selector to a PC***

The 816 IC Eluent Selector can also be operated with the 761 Compact IC without a 762 IC Interface. The RS 232 interface of the two instruments must then be connected directly to the RS 232 interfaces of the PC as shown in Figure 5.

# 2.4 Valve connections

The following diagram shows the flow path in the 816 IC Eluent Selector according to the selected eluent.

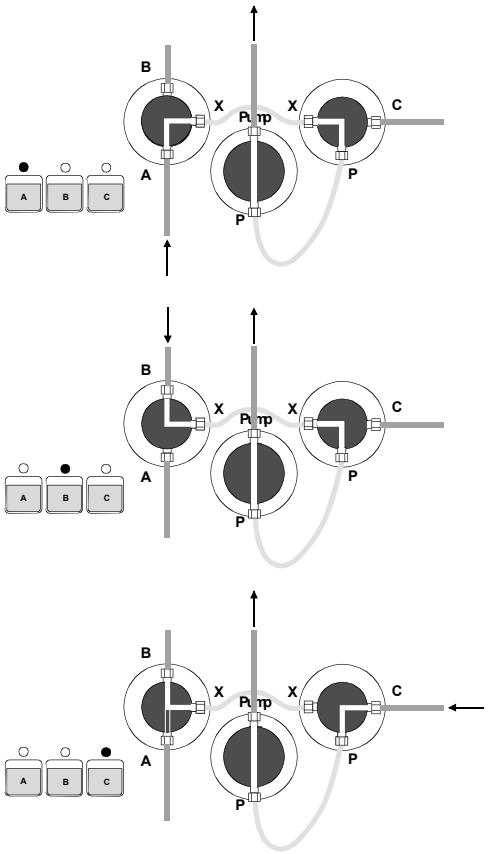



***Figure 6: Flow diagram of the IC Eluent Selector***

The 816 IC Eluent Selector is installed between the eluent storage containers and the high-pressure pump of the IC system. The following connections must be made:

**1 Attaching the eluent inlet tubing**

- Screw the PEEK fittings of the three pieces of **6.1834.020 Aspiration tubing** supplied loosely by hand into connections "**A**" and "**B**" of **Valve I 5** and "**C**" of **Valve II 7** of the IC Eluent Selector. Tighten the screw fittings by using the **6.2621.050 ¼" Wrench** (also included in the standard equipment) to rotate them a further ¼ turn.
- Make sure that the other ends of the aspiration tubing are immersed in the eluents.

**2 Attaching the outlet to the IC pump**

- Screw the **6.1834.030 Tubing connection 816-709** by hand into the "**PUMP**" connection of **Mixing chamber 6**. Tighten up the connection by using the **6.2621.050 ¼" Wrench** to rotate it a further ¼ turn.
- Slide the tubing end onto the capillary at the aspiration connection of the IC pump.

*Make sure that the tubing between the outlet of the IC Eluent Selector and the IC pump is kept as short as possible by shortening the 6.1834.030 Tubing connection 816-709 accordingly. In this way you minimize the dead volume and therefore the reaction time after switching to a different eluent.*

## 2.5 Software installation

The PC program **«IC Net 2.1»** is required for controlling the 816 IC Eluent Selector from a PC. This program runs under the operating systems Windows 95, Windows 98, Windows NT and Windows 2000 and is installed as described in Section 1.4.2 of the **8.110.8223 Instructions for Use** for the Metrodata «**IC Net 2.1**» software.

The installation of the 816 IC Eluent Selector is described in Section 6.12 of the **8.110.8223 Instructions for Use** for the Metrodata «**IC Net 2.1**» software.

Make sure that the RS 232 settings of the 816 IC Eluent Selector and the interface of the connected PC/IC interface are identical. The settings for the 816 IC Eluent Selector are given in Section 4.1.2.

# 3 Operation

## 3.1 Manual operation

### Switching the instrument on/off

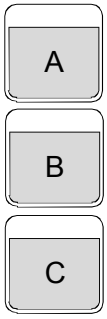
- The 816 IC Eluent Selector is switched on and off with mains switch **8** (see Section 2.2.4).

### Switching to manual operation


LED "**EXT.**" **4** shows whether the instrument is controlled **externally (LED lights up)** or **manually (LED is out)**.

- Press the "**EXT.**" **3** key to switch to manual operation of the 816 IC Eluent Selector.

### Select eluent




LEDs **2** show which eluent is currently selected.

- The eluent is selected by pressing key "**A**", "**B**" or "**C**" **1** .

The settings are retained when the instrument is switched off.

## 3.2 Operation via «IC Net»

### Switching the instrument on/off

- The 816 IC Eluent Selector is switched on and off with mains switch **8** (see Section 2.2.4).

### Switching to external operation


LED "**EXT.**" **4** shows whether the instrument is controlled **externally (LED lights up)** or **manually (LED is out)**.

- Press the "**EXT.**" **3** key to switch to the external mode for remote control of the 816 IC Eluent Selector by «IC Net».

*Only the most important functions and settings for operating the 816 IC Eluent Selector are described in this section. Further information can be found in the Instructions for Use for «IC Net» and in the online help for the program.*

### 3.2.1 Symbol for 816 IC Eluent Selector

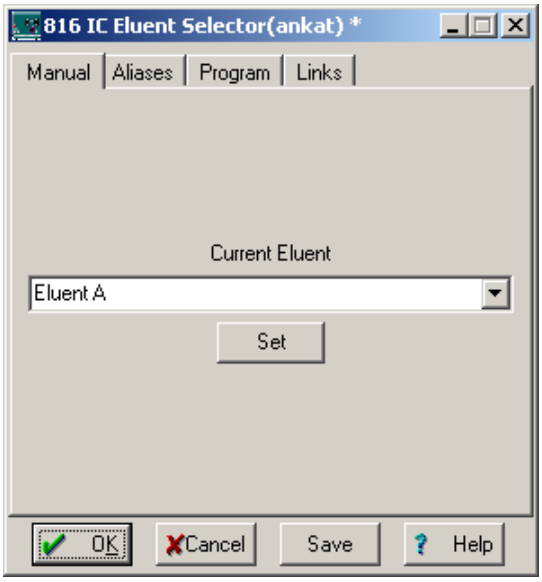
**2.816.0010 816 IC Eluent Selector**

### 3.2.2 Instrument parameters in the "816 IC Eluent Selector" window

The **816 IC Eluent Selector** window for parameter settings is opened with a double-click with the left-hand mouse key on the 816 symbol in the system window or by clicking on this symbol with the right-hand mouse key and then selecting the menu option **Open**. It consists of four register cards **Manual**, **Aliases**, **Program** and **Links**.

#### Manual

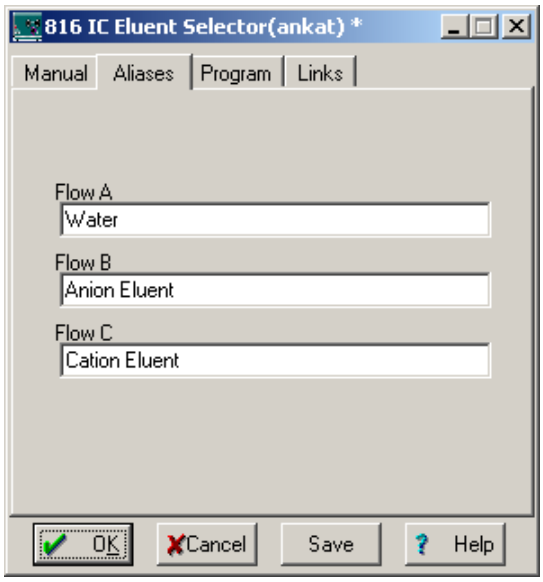
The **Manual** register card of the **816 IC Eluent Selector** window is used for the manual selection of the eluents.




| | |
|---|---|
| **Current eluent** | Selection of **Eluent A**, **Eluent B** or **Eluent C**. |
| **<Set>** | The valves are switched so that the required eluent is delivered. |

## Aliases

In the **Aliases** register card of the **816 IC Eluent Selector** window you can freely define names for connections "**A**", "**B**" **5** and "**C**" **7** of the 816 IC Eluent Selector.

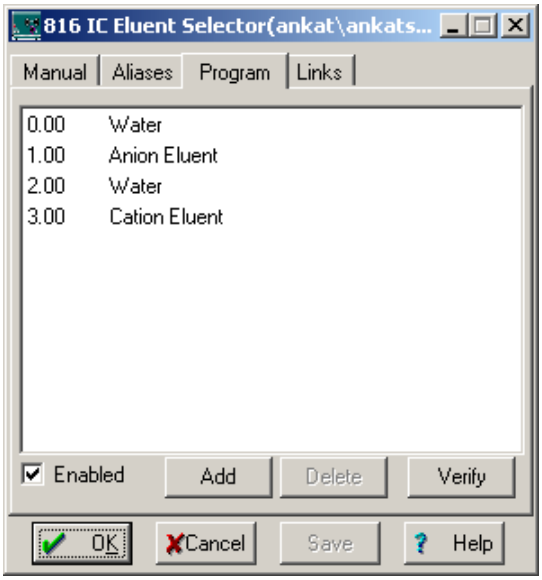



| | |
|---|---|
| **Flow A** | You can rename **Eluent A**. |
| **Flow B** | You can rename **Eluent B**. |
| **Flow C** | You can rename **Eluent C**. |

The names of the eluents entered here replace the default names **Eluent A – C** in all the register cards of the **816 IC Eluent Selector** window.

## Program

On the register card **Program** in the **816 IC Eluent Selector** window you can enter a user-specific time program. Depending on the settings made in the **Start mode** window (for details see Section 4.4.3 **8.110.8223 Instructions for Use** for the Metrodata «**IC Net 2.1**» software) the program will be started automatically at the start of the determination (**Start with determination**) or when the sample is injected (**Start with inject**, in this case the **Enabled** checkbox must be activated).




| | |
|---|---|
| **Time (Column 1)** | Time for command to be executed.<br>Range: **0.0 ... 999.9 min**<br>If no time is entered then the command will be carried out together with the last command for which a time has been entered. |
| **Command (Column 2)** | Switches the IC Eluent Selector to the required eluents. The alias names entered above will be shown for selection. |
| **ENABLED** | Program for program start is activated (if a program is not activated it will not start). |
| **<Add>** | Adds new program command. |
| **<Delete>** | Deletes selected program command. |
| **<Verify>** | Checks time program (any fault will produce an error message). |

## Links

The register card **Links** of the **816 IC Eluent Selector** window is used to select the serial RS 232 interface (for details see **8.110.8223 Instructions for Use** for the Metrodata «**IC Net 2.1**» software).

# 4 Annex

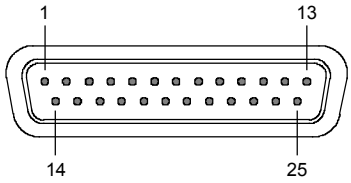
## 4.1 Technical data

### 4.1.1 Parts and controls

| | |
|---|---|
| *Keypad* | Chemical-resistant touch-sensitive polyester keypad with function keys |
| *Indicators* | LEDs for indicating valve status |

### 4.1.2 RS 232 Interface

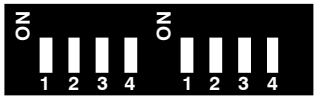
| | |
|---|---|
| *Socket* | D-sub socket 25-pin (male) |




| | |
|---|---|
| *Standards* | EIA RS232C, CCITT V.24, ISO 2110, DIN 66020 |
| *Parameters* | Baud rate: 9600<br>Handshake: no handshake<br>Parity: none<br>Stop bits: 1<br>Data bits: 8 |

### 4.1.3 Mixer speed

| | |
|---|---|
| *Switch* | Dip switch, 8-position |




| | |
|---|---|
| *Function* | Not required for the 816. We recommend that the mixing chamber is kept switched off (all switches down).<br><br>The left-hand six switches control the stirring speed in mixing chamber **6**, the right-hand two have no function.<br><br>Only one of the six left-hand switches can be in the ON position, the stirring speed increases from left to right. |

### 4.1.4 Mains connection

| | |
|---|---|
| *Voltage* | 115 V: 100...120 V ± 10 %<br>230 V: 220...240 V ± 10 %<br>Switched with mains voltage selector in the fuse holder; see Section 2.2.1 |
| *Frequency* | 50...60 Hz |
| *Power consumption* | 40 VA |
| *Fuses* | 5 mm dia., 20 mm long<br>100…120 V: 1.0 A (slow blow)<br>220…240 V: 0.5 A (slow blow)<br>replace only with the same type |

### 4.1.5 Safety specifications

| | |
|---|---|
| *Construction and testing* | According to EN/IEC 61010-1 / UL 3101-1, protection class I |
| *Safety information* | The Instructions for Use contain safety information that must be observed by the user in order to ensure the safe operation of the instrument. |

### 4.1.6 Electromagnetic compatibility (EMC)

| | |
|---|---|
| *Emission* | Standards fulfilled:<br>- EN/IEC 61326-1<br>- EN 55022 |
| *Immunity* | Standards fulfilled:<br>- EN/IEC 61326-1<br>- EN/IEC 61000-4-2<br>- EN/IEC 61000-4-3<br>- EN/IEC 61000-4-4<br>- EN/IEC 61000-4-5<br>- EN/IEC 61000-4-6<br>- EN/IEC 61000-4-11<br>- NAMUR |

### 4.1.7 Ambient temperature

| | |
|---|---|
| *Nominal working range* | +5…+45 °C<br>(at 20…80% relative humidity) |
| *Transport* | –40…+70 °C |

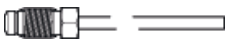
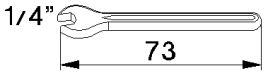
### 4.1.8 Housing

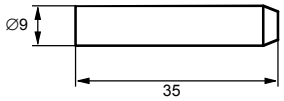
| | |
|---|---|
| *Cover material* | Rigid polyurethane foam(PUR) with flammability proofing for UL94VO, CFC-free |
| *Base material* | Lacquered steel |
| *Width* | 260 mm |
| *Height* | 129 mm |
| *Depth* | 366 mm |
| *Weight* | 4.5 kg |

## 4.2 Standard equipment

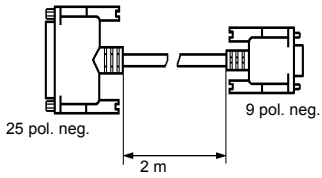
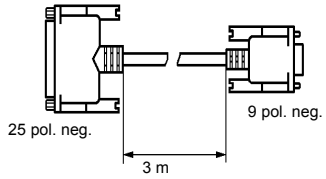
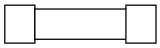
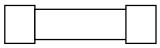
*We reserve the right to make alterations !*
*All dimensions given in mm.*

The 2.816.0010 IC Eluent Selector includes the following accessories:

| *No.* | *Order no.* | *Description* |
|---|---|---|
| **1** | **1.816.0010** | **IC Eluent Selector** |
| **1** | **6.21220X0** | **Mains cable**<br>to customer's requirements:<br>Cable socket — Cable plug<br>Type IEC 320/C 13 — Type SEV 12 (CH…) — 6.2122.020<br>Type IEC 320/C 13 — Type CEE (7), VII (D…) — 6.2122.040<br>Type CEE (22), V — Type NEMA 5-15 (USA) — 6.2122.070 |
| **3** | **6.1834.020** | **Aspiration tubing for 816**<br>made of PTFE, with connection piece for 6.2821.090 Suction filter<br>  <br>Length = 1.5 m,<br>i.d. = 1.5 mm, o.d. = 2.5mm<br>For the connection<br>816 – eluent container |
| **1** | **6.1834.030** | **Tubing connection 816 – 709**<br>made of PTFE<br>  <br>Length = 0.5 m,<br>i.d. = 1.5 mm, o.d. = 2.5mm<br>For the connection<br>816 – high-pressure pump |
| **1** | **6.2621.050** | **Wrench ¼"**<br>  |

| | | |
|---|---|---|
| 1 | 6.2821.090 | **Aspiration filter**<br>pore size 20 µm<br>For 6.1834.020 Aspiration tubing.<br>Set of 5 pieces.<br>  |
| 1 | 8.816.1003 | **Instructions for Use (English)**<br>for 816 IC Eluent Selector |

# 4.3 Optional accessories

| *No.* | *Order no.* | *Description* |
|---|---|---|
| 1 | 6.2134.080 | **RS232 connection cable**<br>816 - 762, length = 2 m<br>  |
| 1 | 6.2125.110 | **RS232 connection cable**<br>816 - PC, length = 3 m<br>  |
| 1 | U.600.0013 | **Fuse**<br>0.5 AT slow blow<br>  |
| 1 | U.600.0016 | **Fuse**<br>1.0 AT slow blow<br>  |

# 4.4 Validation / GLP

**GLP** (**G**ood **L**aboratory **P**ractice) requires, among other things, that the precision and correctness of analytical instruments is checked at regular intervals by using SOPs (**S**tandard **O**perating **P**rocedures, **SOP**). An example of such a standard operating procedure is available from Metrohm under the title **«Application Bulletin No. 277 – Validation of Metrohm Ion Chromatographs»**. This SOP can be adapted for your ion chromatography system and used for its validation.

The 816 IC Eluent Selector must be included as a part of the whole ion chromatography system, whose most important components include the pumps, separating columns, detector and evaluation system, in the all-embracing validation of the whole system.

Please contact your local Metrohm agency in order to receive support in validating your 816 IC Eluent Selector. It can also provide you with validation documentation which will help you to carry out your installation qualification (IQ) and operational qualification (OQ).

Further information about QA, GLP and validation can also be found in the brochure «**Quality Management with Metrohm**» which is also obtainable from your local Metrohm agency.

Checking the electronic and mechanical assemblies of Metrohm instruments can and should be undertaken within the framework of regular servicing by Metrohm technicians.

# 4.5 Warranty and conformity

## 4.5.1 Warranty

The warranty on our products is limited to defects that are traceable to material, construction or manufacturing error which occur within 12 months from the day of delivery. In this case the defects will be rectified in our workshops free of charge. Transport costs are to be paid by the customer.

For day and night operation the warranty is limited to 6 months.

Glass breakage in the case of electrodes or other parts is not covered by the warranty. Checks which are not a result of material or manufacturing faults are also charged during the warranty period. For parts from outside manufacturers, insofar as these constitute an appreciable part of our instrument, the warranty stipulations of the manufacturer in question apply.

With the regard to the guarantee of accuracy the technical specifications in the instruction manual are authoritative.

Concerning defects in materials, construction or design as well as the absence of guaranteed features the purchaser has no rights or claims except those mentioned above.

If damage of the packaging is evident on receipt of a consignment or if the goods show signs of transport damage after unpacking, the carrier must be informed immediately and a written damage report demanded. Lack of an official damage report releases Metrohm from any liability to pay compensation.

If any instruments and parts have to be returned then the original packaging should be used if at all possible. This applies above all to instruments, electrodes, buret cylinders and PTFE pistons. Before embedment in wood shavings or similar material the parts must be packed in a dustproof package (for instruments the use of a plastic bag is essential). If open assemblies are included that are sensitive to electromagnetic voltages (e.g. data interfaces, etc.) then these must be returned in the associated original protective packaging (e.g. conductive protective bag). (Exception: assemblies with a built-in voltage source belong in non-conductive protective packaging).

For damage which arises as a result of non-compliance with these instructions no warranty responsibility whatsoever will be accepted by Metrohm.

### 4.5.2 EU Declaration of Conformity

CE

## EU Declaration of Conformity

The company Metrohm AG, Herisau, Switzerland, certifies herewith, that the following instrument:

**816 IC Eluent Selector**

meets the CE mark requirements of EU Directives 89/336/EEC and 73/23/EEC.

**Source of specifications:**

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

**Description of apparatus:**

External controllable device with two 3-way valves and mixing chamber.

Herisau, March 9th, 2001

| | |
|---|---|
| Dr. J. Frank | Ch. Buchmann |
| Development Manager | Production and Quality Assurance Manager |

### 4.5.3 Certificate of conformity and system validation

## Certificate of Conformity and System Validation

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: | 816 IC Eluent Selector |
| System software: | Stored in ROMs |
| Name of manufacturer: | Metrohm Ltd., Herisau, Switzerland |

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

*Electromagnetic compatibility: Emission*
IEC 61326-1, EN 55022

*Electromagnetic compatibility: Immunity*
IEC 61326-1, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-11, NAMUR

*Safety specifications*
IEC 61010-1, UL3101-1

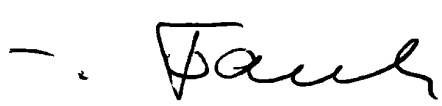
It has also been certified by the Swiss Electrotechnical Association (SEV), which is member of the International Certification Body (CB/IEC).

The technical specifications are documented in the instruction manual.

The system software, stored in Read Only Memories (ROMs) has been validated in connection with standard operating procedures in respect to functionality and performance.

Metrohm Ltd. is holder of the SQS-certificate of the quality system ISO 9001 for quality assurance in design/development, production, installation and servicing.

Herisau, March 9th, 2001



| | |
|---|---|
| Dr. J. Frank | Ch. Buchmann |
| Development Manager | Production and Quality Assurance Manager |

# 4.6 Index

## R



## S



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## V



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