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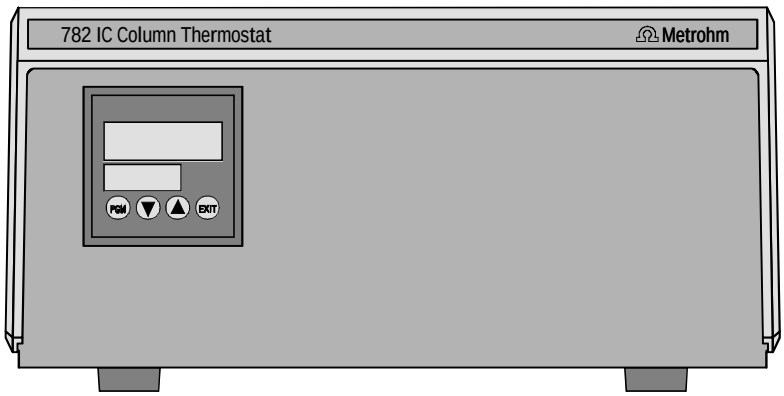
782 IC Column Thermostat



8.782.1003 Instructions for Use

01.03.2000 / dö

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1 Introduction

1.1 Instrument description

The **782 IC Column Thermostat** consists of a control unit and the **«IC Column Heater»** column heating element, which is placed inside the 733 IC Separation Center or the 761 Compact IC. The separating column inserted in the column heating element is brought to the preset temperature within a few minutes. The current and set temperature values can be read off from the control unit at any time.

1.2 Parts and controls

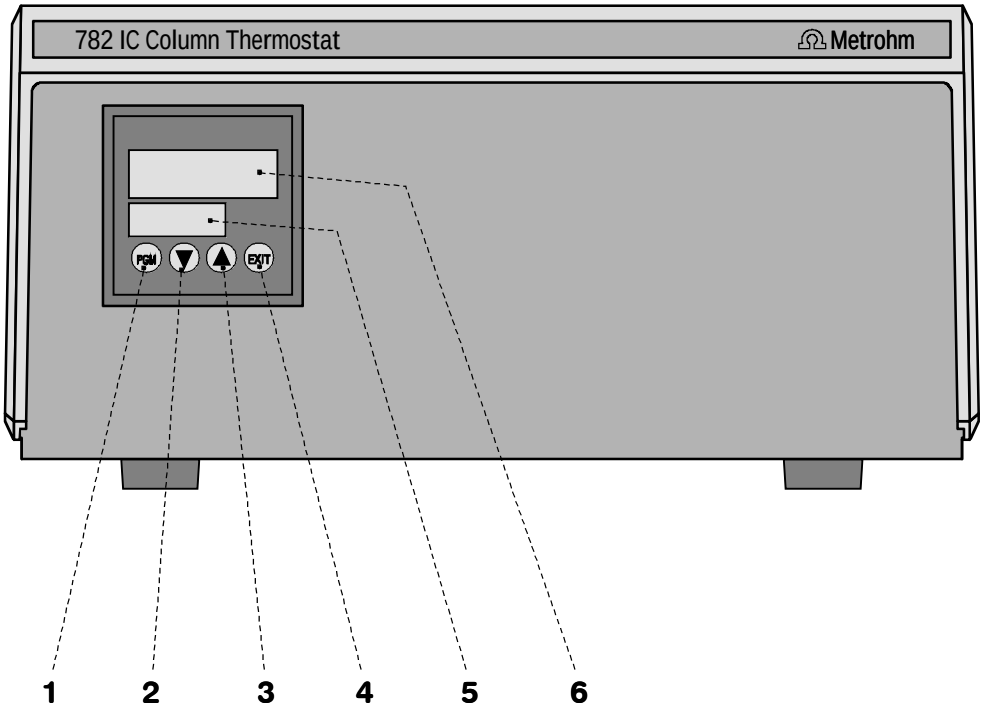


Fig. 1: Front of 782 IC Column Thermostat

1	**Key "PGM"** Program key (without function)	**4**	**Key "EXIT"** Exit key (without function)
2	**Key "Down"** Key to lower the set temperature	**5**	**Current temperature** Digital display (red) of current temperature
3	**Key "Up"** Key to increase the set temperature	**6**	**Set temperature** Digital display (green) of set temperature

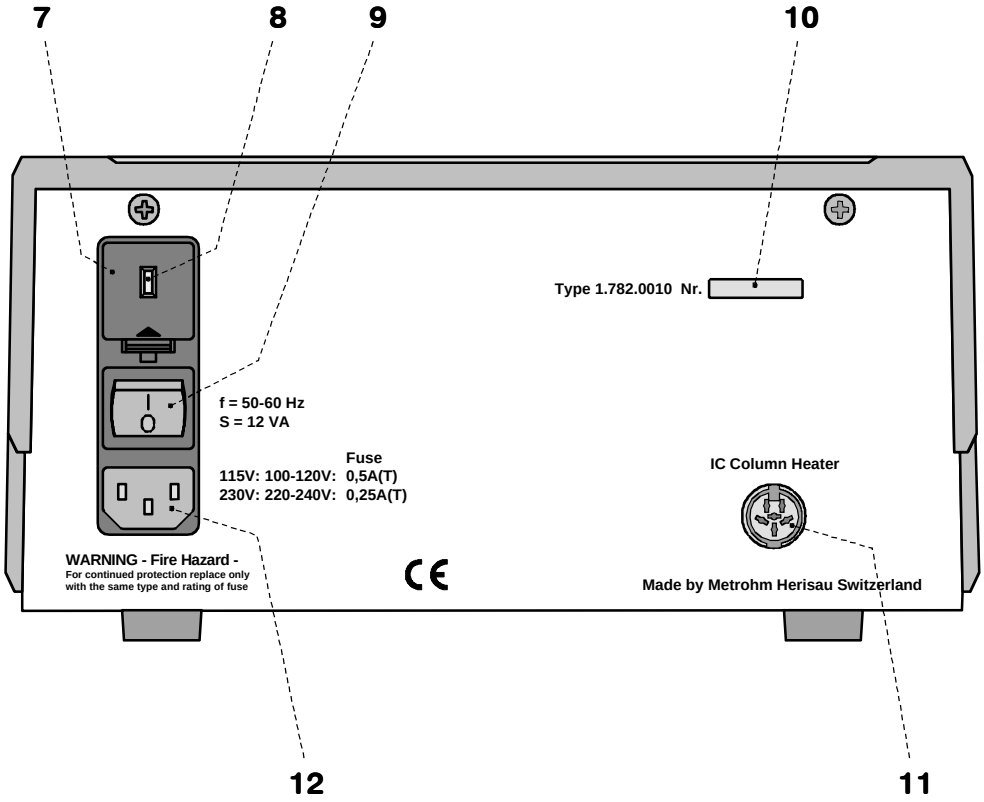


Fig. 2: Rear of 782 IC Column Thermostat

7	**Fuse holder** Changing the fuses, see *section 2.2*	**10**	**Serial number**
8	**Voltage selection insert with display of voltage**	**11**	**Connection for IC Column Heater**
9	**Mains switch** For switching the instrument on/off: I = ON 0 = OFF	**12**	**Mains connection plug** Mains connection see *section 2.2*

1.3 Information about the Instructions for Use

Please read through these Instructions for Use carefully before you put the 782 IC Column Thermostat into operation. The Instructions for Use contain information and warnings to which the user must pay attention in order to assure safe operation of the instrument.

1.3.1 Organization

These **8.782.1003 Instructions for Use** for the 782 IC Column Thermostat provide a comprehensive overview of the installation, startup procedure, operation, and technical specifications of this instrument. The Instructions for Use are organized as follows:

Section 1 **Introduction**
General description of instruments, parts and controls and safety notes

Section 2 **Installation**
Mains connection, connection of IC Column Heater

Section 3 **Operation**
Manual operation

Section 4 **Appendix**
Technical data, standard equipment, options, warranty, declarations of conformity, index

To find the required information on the instruments please use either the **Table of contents** or the **Index** at the back.

1.3.2 Notation and pictograms

The following notations and pictograms (symbols) are used in these Instructions for Use:

12	**Part or control of 782**
26	**Part or control of 732/733**
33	**Part or control of 761**
range	**Menu item, parameter or entry value of 761**
<OK>	**Button of 761**
	**Hazard** This symbol draws attention to a possible danger to life or of injury if the associated directions are not followed correctly.
	**Warning** This symbol draws attention to possible damage to instruments or instrument parts if the associated directions are not followed correctly.
	**Caution** This symbol marks important information. First read the associated directions before you continue.
	**Comment** This symbol marks additional information and tips.

1.4 Safety notes

While electrical safety in the handling of the 782 IC Column Thermostat is assured in the context of the specifications IEC 1010-1 (protection class 1, degree of protection IP40), the following points should be noted:

- **Mains connection**

*Setting the **mains voltage** must be effected in accordance with the instructions in section 2.2.*

- **Opening the instrument**

Inside the instrument there are no parts which must be set or adjusted by the user.

*If the 782 IC Column Thermostat is connected to the power supply, the instrument must not be opened nor must parts be removed from it, otherwise there is a danger of coming into contact with components which are live. Hence, always disconnect the instrument from all voltage sources before you open it and ensure that the **mains cable is disconnected from mains connection** **12** !*

- **Protection against static charges**

Electronic components are sensitive to static charging and can be destroyed by discharges. Before you touch any of the components inside the 782 IC Column Thermostat, you should earth yourself and any tools you are using by touching an earthed object (e.g. housing of the instrument or a radiator) to eliminate any static charges which exist.

2 Installation

2.1 Setting up the instrument

2.1.1 Packaging

The 762 IC Interface is supplied together with the separately packed accessories in special packagings containing shock-absorbing foam linings designed to provide excellent protection. The instrument itself is packed in an evacuated polyethylene bag to prevent the ingress of dust. Please store all these special packagings as only they assure transport of the instrument free from damage.

2.1.2 Check

After receipt, immediately check whether the shipment is complete and has arrived without damage (compare with delivery note and list of accessories in *section 4.2*). In the case of transport damage, see instructions in *section 4.4.1* "Warranty".

2.1.3 Location

Position the instrument in the laboratory at a location convenient for operation, free from vibrations and protected against a corrosive atmosphere and contamination by chemicals.

2.1.4 Arrangement of the instruments

The 782 IC Column Thermostat can be piled up together with other IC instruments (e.g. 732, 733, 709).

2.2 Mains connection

Follow the instructions below for connecting to the power supply. If the instrument is operated with the mains voltage set wrongly and/or wrong mains fuse there is a danger of fire!

2.2.1 Setting the mains voltage

Before switching on the 782 IC Column Thermostat for the first time, check that the mains voltage set on the instrument (see *Fig. 3*) matches the local mains voltage. If this is not the case, you must reset the mains voltage on the instrument as follows:

1 Disconnect mains cable

Disconnect mains cable from mains connection plug **12** of the 782 IC Column Thermostat.

2 Remove fuse holder

Using a screwdriver, loosen fuse holder **7** and take out completely.

3 Change mains voltage

Completely remove voltage selection insert **8** by hand, rotate it through 180° and reinsert it. The required mains voltage (115 or 230 V) must now be visible from the front.

4 Check fuses

Carefully take both fuses out of fuse holder **7** and check their specifications:

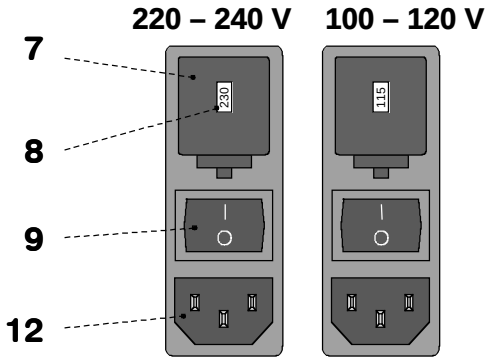
100 ¼ 120 V	**0.5 A (slow-blow)**	Metrohm-No. U.600.0013
220 ¼ 240 V	**0.25 A (slow-blow)**	Metrohm-No. U.600.0010

5 Insert fuses

Change both fuses if necessary and reinsert in fuse holder **7**.

6 Install fuse holder

Push fuse holder **7** back into the opening of the 782 IC Column Thermostat by hand until it clicks into place properly.



7	Fuse holder
8	Voltage selection insert with display of voltage
9	Mains switch
12	Mains connection plug

Fig. 3: Setting the mains voltage

2.2.2 Fuses

Two fuses 0.5 A/slow-blow for 100…120 V or 0.25 A/slow-blow for 220…240 V are installed in the fuse holder **7** of the 782 IC Column Thermostat as standard.

Ensure that the instrument is never put into operation with fuses of another type, otherwise there is danger of fire!

For checking or changing fuses, proceed as described in *section 2.2.1*.

2.2.3 Mains cable and mains connection

Mains cable

The instrument is supplied with one of three mains cables

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

which are three-cored and fitted with a plug with an earthing pin. If a different plug has to be fitted, the yellow/green lead (IEC standard) must be connected to protective earth (protection class 1).

Any break in the earthing inside or outside the instrument can make it a hazard!

Mains connection

Plug the mains cable into mains connection plug **12** of the 782 IC Column Thermostat (see *Fig. 3*).

2.2.4 Switching the instrument on/off

The 782 IC Column Thermostat is switched on and off using mains switch **9**. When the instrument is switched on the two temperature displays **5** and **6** light up.

2.3 IC Column Heater

2.3.1 Installation in 733 IC Separation Center

Proceed as follows to insert the 2.782.0100 IC Column Heater into the 733 IC Separation Center:

1 Switch off all instruments

- Switch off 782 IC Column Thermostat and 732 IC Detector using the mains switch.

2 Insert IC Column Heater

- Unscrew the four knurled screws **34** from the top rear panel **35** of the 733 IC Separation Center and remove rear panel (see *Fig. 5* of *732/733 Instructions for Use*).
- Position the IC Column Heater in the inner compartment and insert the cable permanently attached in opening **29** or **33** of the rear panel **35**.
- Replace rear panel **35** and screw to the 733 IC Separation Center using the four knurled screws **34**.

3 Connect column to injector

- Mount a 6.2744.014 compression fitting on each side of the 6.1836.000 preheating capillary (procedure see *section 2.5.3* of *732/733 Instructions for Use*).
- Connect the long, free end of the 6.1836.000 preheating capillary to connection "4" of the injection valve **68** (see *Fig. 16 or Fig. 17* of *732/733 Instructions for Use*).
- Connect the short, free end of the 6.1836.000 preheating capillary to the inlet end of the separating column **76** (note flow direction).

4 Rinse column

- Place a beaker beneath the column outlet.
- Switch on 709 IC Pump and rinse column with eluent for ca. 10 min.
- Switch off 709 IC Pump.

5 Connect column to detector block or suppressor module

- *without suppressor module:*
  Screw outlet end of separating column **76** to the inlet capillary **82** permanently mounted on the detector block **81**.
- *with suppressor module:*
  Screw outlet end of separating column **76** to suppressor inlet capillary **89** using a 6.2744.010 compression fitting.

6 Insert column in IC Column Heater

- Remove cover of IC Column Heater.
- Insert separating column with inlet and outlet capillaries into the IC Column Heater in such a way that the outlet end of the separting column is at the connecting cable side.
- Insert inlet and outlet capillaries in the slices made for them and close IC Column Heater with the cover.

7 Fix IC Column Heater

- Insert the two 6.2027.060 holders in the mounting rails **83** (see *Fig. 16 or Fig. 17* of *732/733 Instruction for Use*) and fasten IC Column Heater in the holder so that the connecting cable is on the upper side.

8 Connect IC Column Heater

- Plug the connecting cable permanently attached to the IC Column Heater into connection **11** "IC Column Heater" of the 782 IC Column Thermostat (see *Fig. 2*).

2.3.2 Installation in 761 Compact IC

Proceed as follows to insert the 2.782.0100 IC Column Heater into the 761 Compact IC:

1 Switch off all instruments

- Switch off 782 IC Column Thermostat and 761 Compact IC using the mains switch.

2 Insert IC Column Heater

- Unscrew the four knurled screws **15** from the top rear panel **17** of the 761 Compact IC and remove rear panel (see *Fig. 2* of *761 Instructions for Use*).
- Position the IC Column Heater in the inner compartment and insert the cable permanently attached in one of the openings **11** of the rear panel **17**.
- Replace rear panel **17** and screw to the 761 Compact IC using the four knurled screws **15**.

3 Connect column to injector

- Mount a 6.2744.014 compression fitting on each side of the 6.1836.000 preheating capillary (procedure see *section 2.5.3* of *761 Instructions for Use*).
- Connect the long, free end of the 6.1836.000 preheating capillary instead of the column connection capillary **28** at the injection valve **32** (see *Fig. 14* of *761 Instructions for Use*).
- Connect the short, free end of the 6.1836.000 preheating

capillary to the inlet end of the separating column **81** (note flow direction).

4 Rinse column

- Place a beaker beneath the column outlet.
- Open software window for manual system control.
- If necessary, modify **Flow rate** to the value suited for the inserted separting column and click on **<Send to unit>** to send this value to the 761 Compact IC.
- Switch on high-pressure pump (**IC pump**) by clicking **<On>** and rinse column with eluent for ca. 10 min.
- Switch off high-pressure pump by clicking **<Off>**.

5 Connect column to detector block or suppressor module

- *without suppressor module:*
  Screw outlet end of separating column **81** to the inlet capillary **45** permanently mounted on the detector block **46**.
- *with suppressor module:*
  Screw outlet end of separating column **81** to suppressor inlet capillary **96** using a 6.2744.010 compression fitting.

6 Insert column in IC Column Heater

- Remove cover of IC Column Heater.
- Insert separating column with inlet and outlet capillaries into the IC Column Heater in such a way that the outlet end of the separting column is at the connecting cable side.
- Insert inlet and outlet capillaries in the slices made for them and close IC Column Heater with the cover.

7 Fix IC Column Heater

- Insert the two 6.2027.060 holders in the mounting rails **27** (see *Fig. 14* of *761 Instruction for Use*) and fasten IC Column Heater in the holder so that the connecting cable is on the upper side.

8 Connect IC Column Heater

- Plug the connecting cable permanently attached to the IC Column Heater into connection **11** "IC Column Heater“ of the 782 IC Column Thermostat (see *Fig. 2*).

3 Operation

Switch instrument on/off

The 782 IC Column Thermostat is switched on and off using mains switch **9** (see *Fig. 2*) on the rear of the instrument:

I	**Instrument switched on**
0	Instrument switched off

After the instrument has been switched on the two temperature displays **5** and **6** light up and show that the instrument is ready for use.

Set temperature

The desired heating temperature is set using the two keys **2** and **3**. A single pressing of these keys increases or decreases the temperature value shown in the lower display **5** in green by 0.1 °C, continuous pressing of these keys leads to a continuous increase or decrease. A temperature set once will be preserved even after switching the instrument off.

Control temperature

As soon as the instrument is switched on the IC Column Heater is heated to the set temperature. The current temperature is shown in the upper display **6** in red, the set temperature is shown in the lower display **5** in green.

4 Appendix

4.1 Technical data

Temperature control

Temperature range	30…75 °C, to be set in steps of 0.1 °C
Accuracy	± 0.5 °C
Stability	± 0.2 °C

Mains connection

Mains voltage	115 V: 100...120 V ± 10 % 230 V: 220...240 V ± 10 % Switchable with voltage selection insert in fuse holder (see *section 2.2.1*)
Mains frequency	50...60 Hz
Power consumption	12 VA
Fuse	5 mm Ø, 20 mm length 100…120 V: 0.5 A (slow-blow) 220…240 V: 0.25 A (slow-blow)

Safety specifications

Construction / Testing	According to IEC 1010 / EN 61010 / UL 3101-1, protection class 1, degree of protection IP40
Safety directions	The Instructions for Use include information and warnings to which the user must pay attention in order to assure safe operation of the instrument.

Electromagnetic compatibility (EMC)

General requirements	Standards met: IEC61326/EN61326, NAMUR
Emitted interference	Standards met: EN55011, EN55022, EN 50081-1/2
Immunity to interference	Standards met: IEC61000-4-2/EN61000-4-2 (class 4), IEC61000-4-4/EN1000-4-4 (class 4), IEC61000-4-11/EN61000-4-11, IEC61000-4-14/EN61000-4-14, IEC61000-6-2/EN61000-6-2, EN50082-1/2

Ambient temperature

Nominal operating range	+5…+45°C (at 20…80 % atmospheric humidity)
Storage, transport	–40…+70°C

Housing

Material of cover	Polyurethane rigid foam (PUR) with fire protection for fire class UL94VO, CFC-free
Material of base	Steel, enamelled

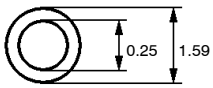
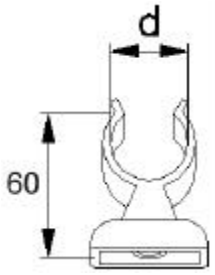
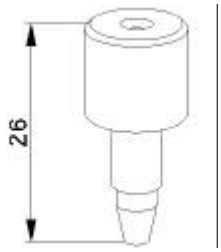
Dimensions

Width	255 mm
Height	128 mm
Depth	340 mm
Weight	4.4 kg (incl. accessories)

4.2 Standard equipment

Subject to changes !
All dimensions are given in mm.

The 2.782.0010 IC Column Thermostat includes the following parts:

Quant.	Order No.	Description
1	1.782.0010	**Control unit "IC Column Thermostat"**
1	1.782.0100	**IC Column Heater**
1	6.1836.000	**Preheating capillary** Length = 0.8 m 
1	6.2027.060	**Holder** to fix the IC Column Heater in the inner compartment of the 733 IC Separation Center or 761 Compact IC Opening d = 37 mm Set of 2 
1	6.2122.0X0	**Mains cable** to customer's specifications: Cable socket — Cable connector Type IEC 320/C 13 — Type SEV 12 (CH…) ..... 6.2122.020 Type IEC 320/C 13 — Type CEE (7), VII (D…) ..... 6.2122.040 Type CEE (22), V — Type NEMA 5-15 (USA…) 6.2122.070
1	6.2744.014	**PEEK compression fitting** For connection of 6.1831.010 PEEK capillaries or 6.1803.020 PTFE capillaries. Set of 2 
1	8.782.1003	**Instructions for Use (English)** for 782 IC Column Thermostat

4.3 Warranty and conformity

4.3.1 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 such cases 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 we are asked to carry out during the warranty period for reasons other than material or manufacturing faults will be invoiced. For parts manufactured by third parties, 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.

With regard to defects in material, 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, the original packaging should be used if at all possible. This applies above all to instruments, electrodes, burette cylinders and PTFE pistons. Before embedding them in wood shavings or similar material, the parts must be packed in a dustproof package (for instruments the use of a plastic bag is imperative). If open assemblies are enclosed in the scope of delivery that are sensitive to electromagnetic voltages (e.g. data interfaces etc.) these must be returned in the associated original protective packaging (e.g. conductive protective bag). (Exception: assemblies with built-in voltage source belong in a 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.

4.3.2 EU Declaration of conformity

CE

EU Declaration of Conformity

The METROHM AG company, Herisau, Switzerland hereby certifies, that the instrument:

782 IC Column Thermostat

meets the requirements of EC Directives 89/336/EWG and 73/23/EWG.

Source of the specifications:

EN 50081-1/2	Electromagnetic compatibility, basic specification Emitted Interference
EN 50082-1/2	Electromagnetic compatibility, basic specification Interference Immunity
EN 61010	Safety requirements for electrical laboratory measurement and control equipment

Description of the instrument:

PC controlled chromatography data system for remote control of IC instruments and automatic evaluation of chromatograms

Herisau, February 18, 2000

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

4.3.3 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:	**782 IC Column Thermostat**	
Name of manufacturer:	Metrohm Ltd., Herisau, Switzerland	
Principal technical information:	Voltages:	100-240 V
	Frequency:	50-60 Hz

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

IEC61326/EN61326, NAMUR, EN55011, EN55022, EN 50081-1/2, IEC61000-4-2/EN61000-4-2 (class 4), IEC61000-4-4/EN1000-4-4 (class 4), IEC61000-4-11/EN61000-4-11, IEC61000-4-14/EN61000-4-14, IEC61000-6-2/EN61000-6-2, EN50082-1/2 — *Electromagnetic compatibility*

IEC1010, EN61010, UL3101-1 — *Security specifications*

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.

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, February 18, 2000

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

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