

771 IC Compact Interface



Manual
8.771.1003



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771 IC Compact Interface

Manual

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<http://products.metrohm.com> under **Literature/Technical documenta-
tion**.

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1 Introduction

1.1 Instrument description

Two detectors (e.g. 732 IC Detector, 791 VA Detector) can be connected to the **771 IC Compact Interface** which is the interface between the analog signal and digital information: the built-in 24-bit A/D converter digitizes the signal coming from the detector and passes it via the r232 interface to the COM interface of the PC. In addition the signal for the start of data recording by the Metrodata «IC Net» software coming from the injector is also transmitted. Two channels can be recorded simultaneously or independently of each other.

The «**ICNet 2.0**» PC software for data acquisition and instrument control is included in the delivery of the 771 IC Compact Interface. For detailed information on this program please refer to the «IC Net» on-line program help as well as the «IC Net» instruction manual.

1.2 Parts and controls

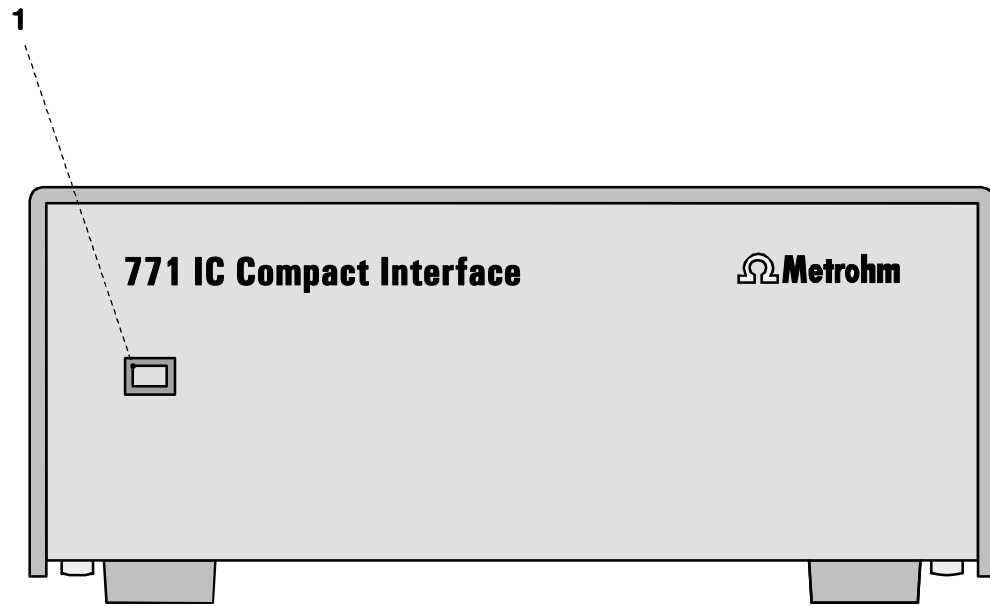


Fig. 1: Front of 2.771.0010 IC Compact Interface

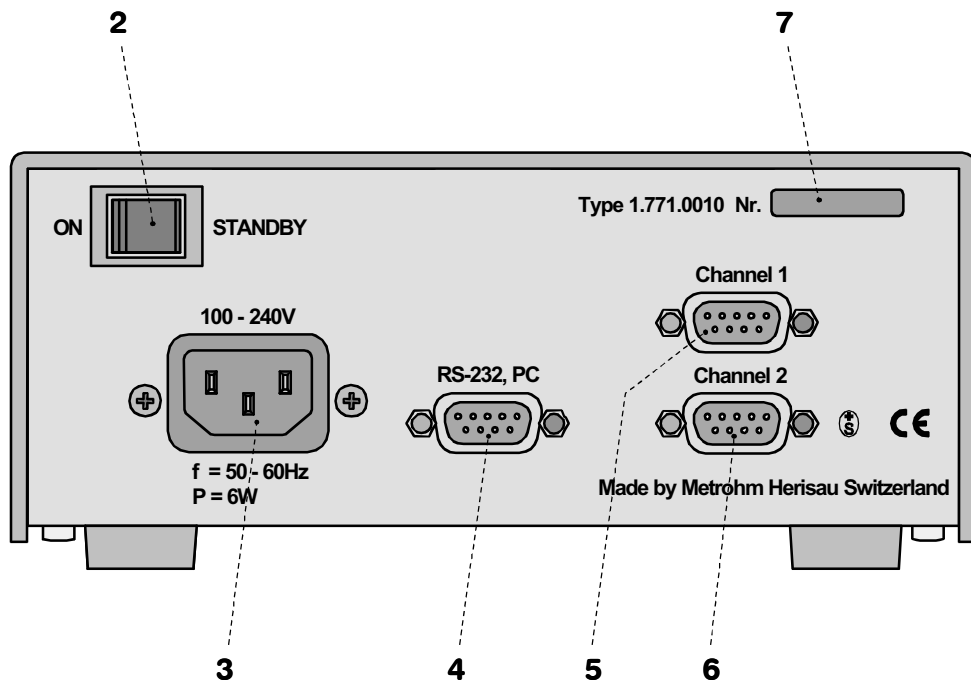


Fig. 2: Rear of 2.771.0010 IC Compact Interface

| | |
|---|-----------------------------------|
| 1 Mains pilot lamp Lights up when instrument is switched on | 5 Analog signal connection |
| 2 Mains switch For switching the instrument on/off | 6 Analog signal connection |
| 3 Mains connection plug Mains connection see <i>section 2.2</i> | 7 Serial number |
| 4 PC connection RS232 interface | |

1.3 Information on the Instructions for Use



Please read through these Instructions for Use carefully before you put the 771 IC Compact Interface 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 **8.771.1003 Instructions for Use** for the 771 IC Compact Interface 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 instrument, parts and controls and safety notes

Section 2 Installation

Mains connection, connection to PC, connection of detectors

Section 3 Operation

Manual operation and operation via «IC Net»





Section 4 Operation

Technical data, standard equipment, options, warranty, declarations of conformity, index

To find the required information on the instruments you will find it an advantage to 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:

| | |
|---|--|
| Range | Menu item, parameter or entry value in «IC Net» program |
| SYSTEM STATE | Program window in «IC Net» program |
| <OK> | Button in «IC Net» program |
| [RUN/STOP] | Switch or key |
| 5 | Part or control of 771 |
|  | 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 771 IC Compact Interface 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**



*The **mains connection** 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 771 IC Compact Interface 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 3** !*

- **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 771 IC Compact Interface, you should earth yourself and any tools you are using by touching anearthed 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 771 IC Compact 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 4.3.1 "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.

2.2 Mains connection

2.2.1 Mains voltage and fuses

The 771 IC Compact Interface has a power supply which automatically adjusts itself to the existing mains voltage (100...240 V) and frequency (50...60 Hz). It is equipped with an electronic overload protection device and also has two fuses; however, these should only be exchanged by Metrohm service technicians.

2.2.2 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 the protective earth (protection class 1).



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

Plug the mains cable into mains connection plug **3** at the 771 IC Compact Interface (see *Fig. 2*).

2.2.3 Switching the instrument on/off

the 771 IC Compact Interface is switched on and off using mains switch **2** (see *Fig. 2*). When the instrument is switched on the mains pilot lamp **1** lights up.

2.3 Connection to the PC

2.3.1 Connecting cable



Always switch off 771 IC Compact Interface and PC before you connect the two instruments with the 6.2134.100 Cable.

Connect the PC connection **4** at the 771 IC Compact Interface to one of the serial COM ports at the PC using the 6.2134.100 Cable (9 pin/9 pin). If only a 25-pin COM interface is available on the PC then the 6.2125.110 Adapter cable or a commercially available adapter must be used.

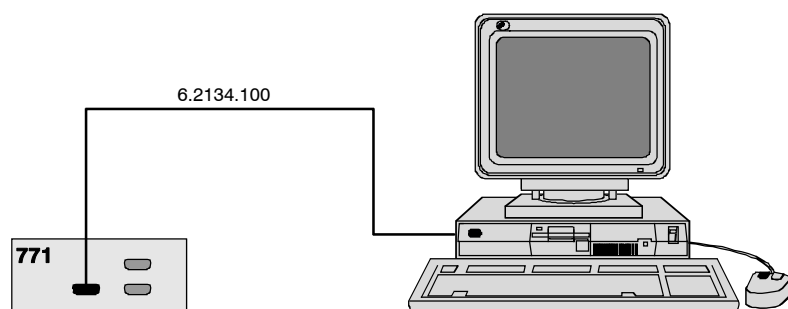


Fig. 3: Connection of 771 IC Compact Interface to PC

2.3.2 Software installation

The PC program «**IC Net 2.0**» is required for the operation of the 771 IC Compact Interface; this is contained on the 6.6034.003 CD included in the accessories. This program runs under Windows 95, Windows 98 and Windows NT operating systems and is installed according to section 1.4.2 of the «*IC Net*» Instructions for Use.

2.4 Connection of detectors

2.4.1 General information



*Before an external instrument is connected to the 771 IC Compact Interface, the 771 IC Compact Interface must always be switched off using mains switch **2** !*

The 771 IC Compact Interface has two connections **5** and **6** for analog input signals (see *Fig. 2*). Information about the technical data of these interfaces is given in section 4.1.

For installation and startup of external detectors proceed as follows:

1 Switch off all instruments

- Switch off 771 IC Compact Interface and all external detectors using the mains switch.

2 Connect instruments

- Connect the instruments to the 771 IC Compact Interface according to the connection diagrams shown in sections 2.4.2 to 2.4.4 by using the cables named in the diagrams. Other instrument combinations can be set up by using these examples as a guide.

3 Switch on all instruments

- Switch on 771 IC Compact Interface and all external instruments using the mains switch.

4 Create new system in «IC Net»

- Start the «IC Net» program.
- Create a new system file with the selected instruments (details see *IC Net Instructions for Use*).

2.4.2 One system with one detector

Example

Analysis of cations with conductivity detection.

Instruments

- 2.771.0010 IC Compact Interface
- 2.732.0010 IC Detector
- 2.733.0010 IC Separation Center with 1 injector

Interconnection

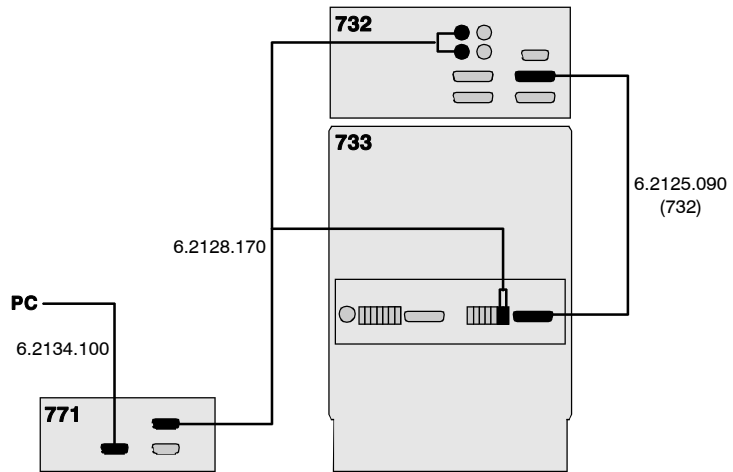


Fig. 4: Connection of 732 and 733

2.4.3 One system with two detectors

Example

Analysis of anions with conductivity and VA detection.

Instruments

- 2.771.0010 IC Compact Interface
- 2.732.0010 IC Detector
- 2.733.0010 IC Separation Center with 1 injector
- 2.791.0010 VA Detector

Interconnection

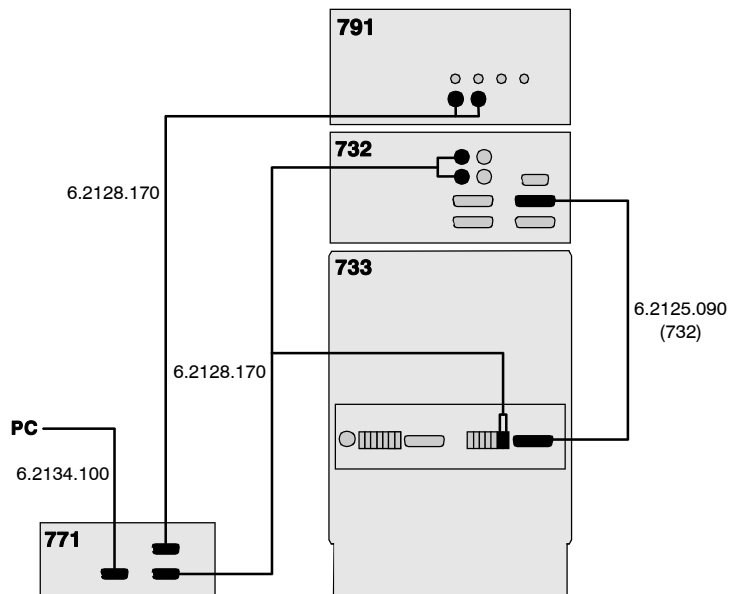


Fig. 5: Connection of 732, 733 and 791

2.4.4 Two systems with two detectors

Example

Simultaneous analysis of cations and anions with two independent conductivity detectors.

Instruments

- 2.771.0010 IC Compact Interface
- 2.732.0110 IC Detector with metal-free detector block for system 1 (cations)
- 2.732.0110 IC Detector with metal-free detector block for system 2 (anions)
- 2.733.0120 IC Separation Center with 2 injectors, metal-free

Interconnection

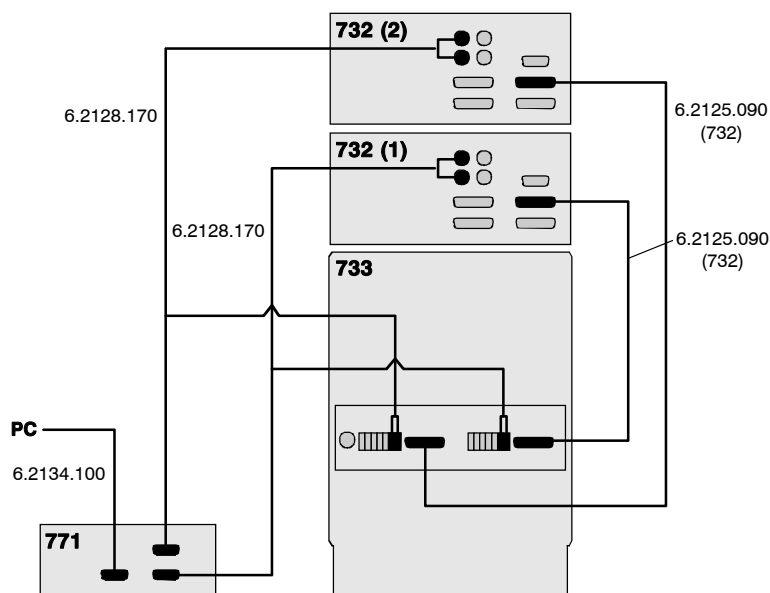


Fig. 6: Connection of 2x732 and 733

3 Operation

3.1 Manual operation

Switch instrument on/off

The 771 IC Compact Interface is switched on and off using mains switch **2** on the rear of the instrument (see Fig. 2).



After the instrument has been switched on the mains pilot lamp **1** lights up to show that the instrument is ready for use.

3.2 Operation via «IC Net»



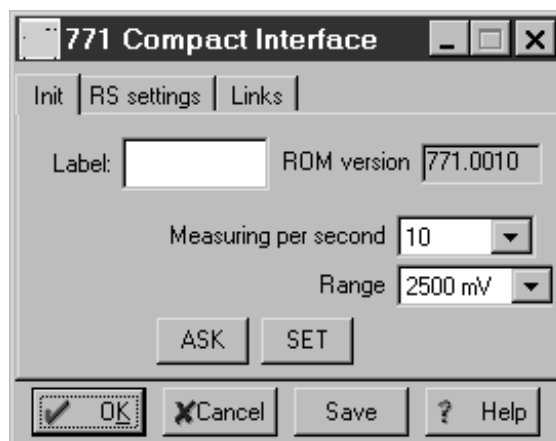
This section describes only the most important points concerning the operation of the 771 IC Compact Interface. For further details please refer to the «IC Net» Instructions for Use and to the on-line help in the PC program.



By clicking the 771 icon in the toolbar with the left mouse button or by clicking this icon with the right mouse button and selecting the **Open** menu item the **771 Compact Interface** window for parameter settings is opened. It consists of three tabs **Init**, **RS settings** and **Links**.

Init

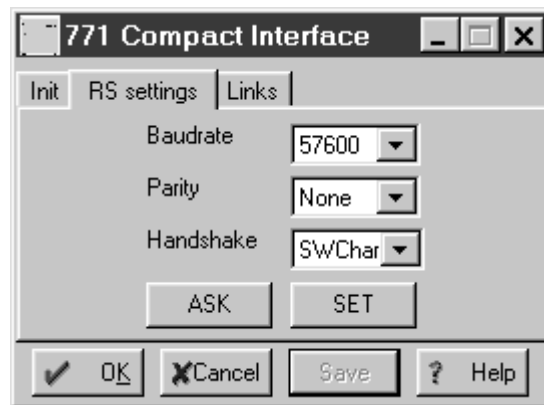
The **Init** tab of the **771 Compact Interface** window contains data acquisition parameters for the 771 IC Compact Interface.



| | |
|-----------------------------|---|
| Label | Optional label to name the interface with maximum 8 characters. |
| ROM version | Instrument program version number. |
| Measuring per second | Number of data points measured per s. Entry range: 10, 20, 30, 50, 60 points/s |
| Range | Range for AD converter . Example: converts ± 2500 mV to 2^{24} bits Entry range: 2500, 1250, 625, 312.5, 156.25, 78.125, 39.062 mV |
| <ASK> | Read current parameters from 771 IC Compact Interface. |
| <SET> | Send current parameters to 771 IC Compact Interface. |

RS settings

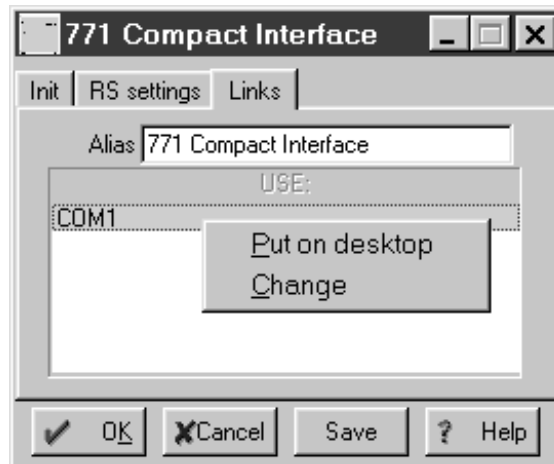
The **RS settings** tab of the **771 Compact Interface** window contains RS232 parameters for the 771 IC Compact Interface.



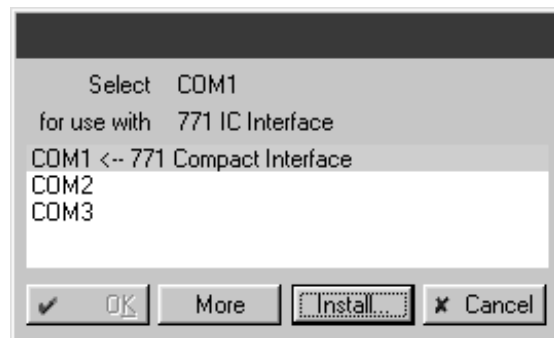
| | |
|--------------------|---|
| Baudrate | Baud rate of the device. Selection: 1200...115200 Default value: 57600 |
| Parity | Parity check. Selection: None, Even, Odd Default value: None |
| Handshake | Enable/disable software handshake mode. Selection: Swchar, none Default value: SWchar |
| <ASK> | Read current parameters from 771 IC Compact Interface. |
| <SET> | Send current parameters to 771 IC Compact Interface. |

Links

The **Links** tab of the **771 IC Interface** is used for RS232 interface (COM port) selection and settings.



| | |
|-----------------------|---|
| Alias | Name of the instrument. |
| COM # | If this entry is clicked with the right mouse button, the following menu appears: |
| Put on desktop | Possibility for setting RS232 interface parameters (details see on-line help). |
| Change | Possibility for changing the RS232 interface. The following window is opened, where the COM port can be changed by clicking on the desired entry. |



4 Appendix

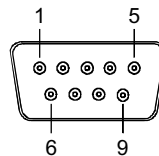
4.1 Technical data

Mains connection

| | |
|--------------------------|---|
| <i>Voltage</i> | 100...240 V |
| <i>Frequency</i> | 50...60 Hz |
| <i>Power consumption</i> | 6 W |
| <i>Fuse</i> | 2 × 1 ATH (to be replaced by Metrohm Service only using the same type) Additional electronic overload protection |

PC interface (RS232)

Connector Dsub connector 9 pin (male)

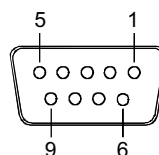


| | |
|-----------------------|---|
| <i>Baud rate</i> | 1'200...115'200 |
| <i>Data bits</i> | 8 |
| <i>Stop bits</i> | 1 |
| <i>Handshake</i> | SWChar, none |
| <i>Parity</i> | none, even, odd |
| <i>Pin assignment</i> | Pin 1,4,6: internally connected Pin 2: RxD (Received Data) Pin 3: TxD (Transmitted Data) Pin 5: GND (Signal Ground) Pin 7,8: internally connected |

Analog signal interface

Function 2 potential-free analog signal inputs per system.

Connector Dsub connector 9 pin (female)



| | |
|----------------------------|--|
| <i>Input voltage range</i> | ± 2.5 V |
| <i>Input amplification</i> | 1, 2, 4, 8, 16, 32, 64 (selectable) |
| <i>Sampling rate</i> | 10, 20, 30, 50, 60 measuring points/s |
| <i>Resolution</i> | 24 Bit (1 LSP = 0.298 μV at amplification 1) |

| | |
|-----------------------|---|
| <i>Noise</i> | < 20 μ Vpp < 3 μ Vrms (at 0 V input voltage, amplification 1 and sampling rate 10 Hz) |
| <i>Zero error</i> | \pm 2.5 mV |
| <i>Pin assignment</i> | Pin 1,4,5: GND (ground, connected to housing) Pin 2: Analog + Pin 3: Analog – Pin 8: RUN Pin 9: COM |

Safety specifications

| | |
|-----------------------------|--|
| <i>Construction/testing</i> | According to IEC 1010 / EN 61010 / UL 3101-1, protection class 1, degree of protection IP40 |
| <i>Safety directions</i> | The Instructions for Use include information and warnings which must be heeded by the user to assure safe operation of the instrument. |

Electromagnetic compatibility (EMC)

| | |
|---------------------------------|---|
| <i>Emitted interference</i> | Standards met: EN55011 (level B), EN55022 (level B), EN 50081-1/2, EN61000-3-2 |
| <i>Immunity to interference</i> | Standards met: IEC61000-4-2/EN61000-4-2 (level 3), IEC61000-4-3/EN61000-4-3 (level 3), IEC61000-4-4/EN61000-4-4 (level 4), IEC61000-4-5/EN61000-4-5 (level 2/3), IEC61000-4-6/EN61000-4-6 (level 3), IEC61000-4-11/EN61000-4-11, IEC61000-4-14/EN61000-4-14 (level 3), IEC61000-6-2, IEC61326-1+A1, EN50082-1, NAMUR |

Ambient temperature

| | |
|--------------------------------|---|
| <i>Nominal operating range</i> | +5...+45°C (at 20...80 % atmospheric humidity) |
| <i>Storage, transport</i> | –40...+70°C |

Housing

| | |
|-----------------|-----------------|
| <i>Material</i> | Steel, enameled |
|-----------------|-----------------|

Dimensions

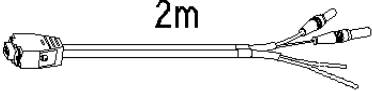
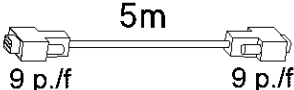
| | |
|---------------|------------------------------|
| <i>Width</i> | 183 mm |
| <i>Height</i> | 79 mm |
| <i>Depth</i> | 165 mm |
| <i>Weight</i> | 1.9 kg (without accessories) |

4.2 Scope of delivery



*Subject to changes !
All dimensions are given in mm.*

The 771 IC Compact Interface includes the following parts:

| Quant. | Order No. | Description | | | | | | | | | | | | |
|---------------------|--------------------------|--|---------------------|-------------------|--|-------------------|---------------------|------------|-------------------|--------------------------|------------|------------------|-------------------------|------------|
| 2 | 6.2128.170 | Connection cable Connection cable 771 IC Compact Interface – detector analog output  | | | | | | | | | | | | |
| 1 | 6.2134.100 | RS232 connection cable Connection cable 771 IC Compact Interface – PC  | | | | | | | | | | | | |
| 1 | 6.6034.003 | Software CD«IC Net 2.0» | | | | | | | | | | | | |
| 1 | 6.2122.0X0 | Mains cable according to customer's specification: <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"><u>Cable socket</u></td> <td style="width: 50%;"><u>Cable plug</u></td> <td></td> </tr> <tr> <td>Type IEC 320/C 13</td> <td>Type SEV 12 (CH...)</td> <td>6.2122.020</td> </tr> <tr> <td>Type IEC 320/C 13</td> <td>Type CEE (7), VII (D...)</td> <td>6.2122.040</td> </tr> <tr> <td>Type CEE (22), V</td> <td>Type NEMA 5-15 (USA...)</td> <td>6.2122.070</td> </tr> </table> | <u>Cable socket</u> | <u>Cable plug</u> | | 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 |
| <u>Cable socket</u> | <u>Cable plug</u> | | | | | | | | | | | | | |
| 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 | 8.771.1001 | Instructions for Use(English) for 771 IC Compact Interface | | | | | | | | | | | | |
| 1 | 8.110.8193 | Instructions for Use(English) for «IC Net 2.0» PC program | | | | | | | | | | | | |
| 1 | 8.110.8213 | Instructions for Use(English) for «Autodatabase 1.0» PC program | | | | | | | | | | | | |
| 1 | 8.110.8207 | Registration card | | | | | | | | | | | | |

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 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 of outside manufacture 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.


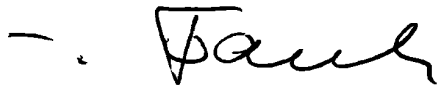

Concerning defects in material, construction or design as well as the absence of guaranteed features, the orderer has no rights or claims except those mentioned above.

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.

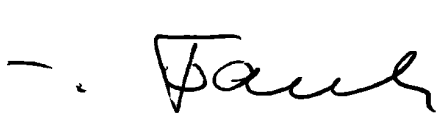

If any instruments and parts have to be returned, the original packaging should be used if at all possible. This applies above all to instruments, electrodes, burette cylinders and PTFE pistons. Before embedment in wood shavings or similar material, the parts must be packed in a dust-proof package (for instruments, 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).

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

4.3.2 EU Declaration of conformity

| | | | | | | | |
|--|--|--------------|--|------------|---|----------|--|
|  | | | | | | | |
| <p>EU Declaration of Conformity</p> <p>The Metrohm AG company, Herisau, Switzerland hereby certifies that the instrument:</p> <p style="margin-left: 40px;">771 IC Compact Interface</p> <p>meets the requirements of EC Directives 89/336/EWG and 73/23/EWG.</p> | | | | | | | |
| <p>Source of the specifications:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 20%; padding-left: 40px;">EN 50081-1/2</td> <td>Electromagnetic compatibility, basic specification Emitted Interference</td> </tr> <tr> <td style="padding-left: 40px;">EN 50082-1</td> <td>Electromagnetic compatibility, basic specification Interference Immunity</td> </tr> <tr> <td style="padding-left: 40px;">EN 61010</td> <td>Safety requirements for electrical laboratory measurement and control equipment</td> </tr> </table> | | EN 50081-1/2 | Electromagnetic compatibility, basic specification Emitted Interference | EN 50082-1 | Electromagnetic compatibility, basic specification Interference Immunity | EN 61010 | Safety requirements for electrical laboratory measurement and control equipment |
| EN 50081-1/2 | Electromagnetic compatibility, basic specification Emitted Interference | | | | | | |
| EN 50082-1 | Electromagnetic compatibility, basic specification Interference Immunity | | | | | | |
| EN 61010 | Safety requirements for electrical laboratory measurement and control equipment | | | | | | |
| <p>Description of the instrument:</p> <p style="margin-left: 40px;">Instrument for analog/digital conversion of two detector signals</p> | | | | | | | |
| <p>Herisau, April 21, 1999</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Dr. J. Frank Development Manager</p> </div> <div style="text-align: center;">  <p>Ch. Buchmann Production and Quality Assurance Manager</p> </div> </div> | | | | | | | |

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: | 771 IC Compact Interface |
| Name of manufacturer: | Metrohm Ltd., Herisau, Switzerland |
| Technical specifications: | Voltages: 100-240 V Frequency: 50-60 Hz |
| <p>This Metrohm instrument has been built and has undergone final type testing according to the standards:</p> <p>EN55011 (level B), EN55022 (level B), EN 50081-1/2, EN61000-3-2, IEC61000-4-2/EN61000-4-2 (level 3), IEC61000-4-3/EN61000-4-3 (level 3), IEC61000-4-4/EN61000-4-4 (level 4), IEC61000-4-5/EN61000-4-5 (level 2/3), IEC61000-4-6/EN61000-4-6 (level 3), IEC61000-4-11/EN61000-4-11, IEC61000-4-14/EN61000-4-14 (level 3), IEC61000-6-2, IEC61326-1+A1, EN50082-1, NAMUR</p> <p style="text-align: right;">— <i>Electromagnetic compatibility</i></p> <p>IEC1010, EN61010, UL3101-1 — <i>Security specifications</i></p> <p>It has also been certified by the Swiss Electrotechnical Association (SEV), which is member of the International Certification Body (CB/IEC).</p> <p>The technical specifications are documented in the instruction manual.</p> | |
| 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, April 21, 1999 | |
|  |  |
| Dr. J. Frank | Ch. Buchmann |
| Development Manager | Production and Quality Assurance Manager |

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