

# 712 Conductometer

## 8.712.1053 Annex to the 8.712.1003 Instructions for use

In the 712 Conductometer the **5.712.0015 program version** is installed as standard from series 13 upwards. With this version the automatic switch-over of the measuring range can be given a bottom limit. This makes it possible to better follow very rapid changes in conductivity, such as occur when calcium hydroxide is dissolved in distilled water. A further change affects the Pt temperature sensor: it is now possible to correct an offset error. The corresponding **innovations** together with some **corrections** and **additions** to Instructions for use 8.732.1003 are described below; the page numbers mentioned refer to the page numbers in the Instructions for use.

### Measuring conductivity and pH in the same vessel

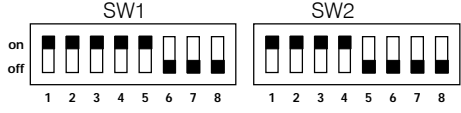

p. 9



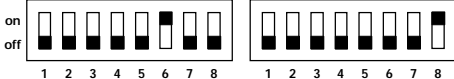
In practice the circuit shown in *Fig. 7* for the simultaneous measurement of conductivity (with 712) and pH (with Titrino) leads to problems with earthing loops which falsify the measurements obtained. As a result this circuit can no longer be recommended. Whenever possible you should use two different vessels for measuring the conductivity and pH, or alternatively use the Titroprocessor 726 instead of the Titrino as in this instrument the measuring inputs are electrically isolated.

### Connecting printers

p. 11-12

The following table contains information about the connection of some selected printers. Setting the RS232 parameters under ">config/RS232 settings" is the same for all printers and is therefore only shown for the IBM Proprinter.

Printer	Cable	RS232 settings	Settings on printer
IBM Proprinter	6.2125.050	<pre>&gt;config/printer send to :      IBM &gt;config/RS232 settings baud rate:    9600 data bit:     8 stop bit:     1 parity:       none handshake:    Hws &gt;graphics width         1.0 length        1.0</pre>	see printer manual
Epson with 6-pin round connector	6.2125.040	<pre>&gt;config/printer send to:      Epson &gt;graphics width         0.7 length        0.7</pre>	Settings of the DIP switches: 
Epson with additional serial interface #8148	6.2125.050	<pre>&gt;config/printer send to:      Epson &gt;graphics width         0.7 length        0.7</pre>	Settings of the DIP switches on the <u>interface</u> : 

<i>Printer</i>	<i>Cable</i>	<i>RS232 settings</i>	<i>Settings on printer</i>															
Epson LX-300	6.2125.050	>config/printer send to: Epson >graphics width 0.7 length 0.7	see printer manual															
Epson and Canon printers with parallel interface	6.2125.020 + 2.145.0300 Serial/parallel converter	>config/printer send to: Epson >graphics width 0.7 length 0.7	see printer manual															
Seiko DPU-411	6.2125.020	>config/printer send to: Seiko >graphics width 1.0 length 1.0	Settings of the DIP switches: DIP01                  DIP02  The switchable 7-bit ASCII character set of the printer will be automatically set to the national character sets in accordance with the set dialog language.															
Seiko DPU-414	6.2125.130	>config/printer send to: Seiko >graphics width 1.0 length 1.0	Settings of the DIP switches: Dip SW-1      Dip SW-2      Dip SW-3 1      OFF      ON      ON 2      ON      OFF      ON 3      ON      ON      ON 4      OFF      ON      ON 5      ON      ON      OFF 6      OFF      ON      ON 7      ON      OFF      ON 8      ON      OFF      ON The switchable 7-bit ASCII character set of the printer will be automatically set to the national character sets in accordance with the set dialog language.															
Citizen IDP562-RS	6.2125.050	>config/printer send to: Citizen >graphics width 1.0 length 1.0	Settings of the DIP switches:  SSW1 The switchable 7-bit ASCII character set of the printer can be changed to the national character sets only by setting the DIP switches 4 and 5 in the printer: <table border="0"> <tr> <td><b>4</b></td> <td><b>5</b></td> <td><b>Character set</b></td> </tr> <tr> <td>open</td> <td>open</td> <td>USA</td> </tr> <tr> <td>closed</td> <td>closed</td> <td>Great Britain</td> </tr> <tr> <td>closed</td> <td>open</td> <td>France</td> </tr> <tr> <td>open</td> <td>closed</td> <td>Germany</td> </tr> </table> Spanish does not have its own character set (it is best to select French).	<b>4</b>	<b>5</b>	<b>Character set</b>	open	open	USA	closed	closed	Great Britain	closed	open	France	open	closed	Germany
<b>4</b>	<b>5</b>	<b>Character set</b>																
open	open	USA																
closed	closed	Great Britain																
closed	open	France																
open	closed	Germany																
HP Deskjet with serial interface	6.2125.050 or adapter cable 25-pin neg./9-pin pos. (e.g. HP C2933A)	>config/printer send to: HP >graphics width 1.0 length 1.0	Settings of the DIP switches: A                          B 															
HP Laserjet with serial interface	Adapter cable 25-pin neg./9-pin pos. (e.g. HP C2933A)	>config/printer send to: HP >graphics width 1.0 length 1.0	see printer manual															
HP Deskjet/Laserjet with parallel interface	66.2125.020 + 2.145.0300 Serial/parallel converter	>config/printer send to: HP >graphics width 1.0 length 1.0	see printer manual															

## Changing the dialog display

p. 14

With the measuring range limit switched on, the lowest measuring range is shown on the bottom left in the dialog display in the basic condition of the conductivity measurement instead of the cell constant, e.g.:

```
200 mS      20.0 °C
            2.00 %/°C
```

### Dialog display with measuring range limit

## Offset correction for temperature sensor

p. 29

A new block ">config/Pt sensor" is now present under the key <config>; the two following parameters can be entered in this block:

```
>config/Pt sensor
Pt id.          xxxxxxxxxxxx
```

### Identification for Pt sensor

Character string for identification of the temperature sensor (max. 10 characters, entry see Sect. 4.2.5). This identification appears in the print head as soon as a Pt sensor is connected.

```
>config/Pt sensor
Pt correction   0.0 °C
               -9.9...+9.9 °C
```

### Offset correction for Pt sensor

The entered value describes the difference between the set temperature  $T_{\text{set}}$  measured with a comparison thermometer and the actual temperature  $T_{\text{act}}$  measured by the Pt sensor:

$$\text{Pt correction} = T_{\text{set}} - T_{\text{act}}$$

If the Pt correction is  $\neq 0.0$  °C then the correction value is added to the measured value and the set temperature is displayed. In this case an "\*" appears in the display before the temperature value. The correction value also appears in the print head as soon as a Pt sensor is connected.

## New date format

p. 29

The date is now entered and printed out with 4 places provided for the year.

```
>config/auxiliaries
date           YYYY-MM-DD
```

### Date

Current date with numeric data for year (YYYY), month (MM) and day (DD).

## New parameters for range limit

p. 33

Under the key <cond param> the following parameter is displayed again at the end of the block ">cond/parameters":

```
>cond/parameters
range limit:   OFF
              2 µS, 20 µS, 200 µS,
              2 mS, 20 mS, 200 mS,
              OFF
```

### Range limit

The value entered describes the lowest measuring range for the automatic switch-over.

OFF Automatic switch-over in the entire range (as before)

## Temperature display with Pt correction

p. 49

If a Pt correction  $\neq 0.0$  °C is entered then the dialog display alters as follows:

```
      * 24.7 °C
0.848 /cm  2.00 %/°C
```

### Dialog display in main measuring mode "Conductivity measurement"

In the 1<sup>st</sup> line an asterisk " \* " appears in front of the temperature value.

```
Pt 100
Pt correction  1.2 °C
```

### Dialog display in main measuring mode "Temperature measurement"

The entered value for the Pt correction appears in the 2<sup>nd</sup> line.

## Display of the measuring range

p. 60

Under the key <info> the currently applicable measuring range is displayed again after the measuring frequency:

```
measuring range  200 mS
                2 µS, 20 µS, 200 µS,
                2 mS, 20 mS, 200 mS
```

### Current measuring range

The currently applicable measuring range is displayed.

## Alterations in the measurement output and curve plot

p. 65-69

If a Pt sensor is connected to Conductometer 712 then when measurements and curves are outputted the two parameters "Pt id." and "Pt correction" will be printed out in the print head.

## New error messages

p. 75

The following two new error messages can now be outputted via the RS232 interface:

<i>Error</i>	<i>Meaning</i>	<i>Exit/Corrective action</i>
E231	EEPROM block error Pt correction	<quit>, reenter values for this block
E238	EEPROM block error instrument number	<quit>, reenter instrument number

## New remote control commands

p. 76

The following remote control commands are new:

&Conductivity.Parameter.RangeLimit	Measuring range limit (2/20/200 µS, 2/20/200 mS, OFF)
&Config.Tempsensor.SensorId	Identification for Pt sensor (max. 10 ASCII characters)
&Config.Tempsensor.Correction	Offset correction for Pt sensor (-9.9...+9.9 °C)
&Info.ActualInfo.Button.ActRange	Current measuring range

The instrument is prepared for diagnosis as follows (point 1):

1. Switch off mains.
2. Remove all external connections from rear panel except the mains cable.
3. Press key <9> and switch on mains supply. Keep key <9> pressed down until the following display appears:

```
initialization EEPROM ?
ENTER>yes '9' >diagnosis
```

ENTER Re-initialization (access only for service personnel with safety code)  
9 Entry to diagnosis

4. Press key <9>. The following display appears:

```
diagnosis
>EEPROM initialization
```

**Measuring errors for temperature**

The measuring errors for temperature measurement have been newly defined as follows:

-170 ... 0 °C	± 0.2 °C/100 °C
0 ... 100 °C	± 0.2 °C
100 ... 500 °C	± 0.5 °C/100 °C

**Alterations to the optional accessories**

In addition to the optional accessories listed in *Sect. 9.2.2* the following accessories are also available:

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**6.0901.130**    **Immersion Cell** with fixed cable (1 m, 2 × connector B); cell constant  $c \approx 1 \text{ cm}^{-1}$ ; shaft length 108 mm; largest diameter 20 mm; minimum immersion depth 50 mm; electrodes not glazed

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**6.0901.260**    **Immersion Cell** with fixed cable (1 m, 2 × connector B); cell constant  $c \approx 10 \text{ cm}^{-1}$ ; shaft length 125 mm; largest diameter 20 mm; minimum immersion depth 80 mm

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**6.0912.110**    **Immersion Cell with integrated Pt 1000 temperature sensor** with fixed cable (1.2 m, 2 × connector B); cell constant  $c \approx 0.8 \text{ cm}^{-1}$ ; shaft length 125 mm; largest diameter 12 mm; minimum immersion depth 30 mm

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**6.1110.110**    **Pt 1000 Resistance Thermometer for sample changer** with plug-in head G and adjustable SGJ sleeve; largest diameter 12 mm; minimum immersion depth 20 mm

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**6.2104.110**    **Cable for Pt 1000 Sensor**  
Cable for Pt 1000 Resistance Thermometers (6.1110.100 and 6.1110.110); length 2 m; 2 × connector B