

# Instruction manual for the SCHOTT® Instruments Conductivity measuring cells type

LF 513T, 613T, 713T, 713T-250,  
LF 813T, 913T, 913T-ID,  
LF 1100+, 1100T+, 4100+, 5100+, 5100T+



Picture of exemplary electrodes

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## Putting into operation

The LF913 T-ID conductivity measuring cell is equipped with an automatic sensor detection system in the connection plug. This system stores the sensor type and the serial number as well as the calibration data. To be able to use the automatic sensor detection feature, you will need a measurement device supporting this function. For further information, please refer to the operating instructions of the measurement device.

2 pole measuring cells (LF1100+,1100T+, 4100+, 5100+, 5100T+, 513T) are delivered platinated.

4 channel and 5 channel conductivity measuring cells (LF613T, 713T 713T-250 and LF 813T, 913T, 913T-ID) are immediately ready for use and do not need to be platinumplated.

Please check the cell constant prior to the first use. The interval of the next following verification will depend on the circumstances of use.

The conductivity measuring cell (except LF4100+) has to immerse by a minimum of 65 mm (ring mark) in the solution to be measured. The measurement value may be read off as soon as the signal has stabilised. In the case of temperature changes, this may take up to two minutes.

The detachable threaded protection cap (only PPO shaft) at the front end of the measurement cell (LF513T, 613T, 813T) will protect the glass tube with the platinum rings and determines the cell constant.

## Storage and maintenance

The storage conditions for conductivity measuring cells may be within the range of a 0-50°C and 5-95% relative humidity. Any conditions leading to condensation of water at the plug ought to be avoided. Prior to any extended period of storage, the electrodes (platinum rings) of the measuring cell should be cleaned, if applicable (please refer below), and the measuring cell should be stored in its original cardboard box.

## Cleaning

Thorough cleaning is particularly recommended prior to measuring low conductivities. To clean the device, please detach the sensor.

Unscrew and remove the protective cap (only LF513T, 613T, 813T) of the measuring cell.

2 pole measuring cells should only be rinsed with water, if necessary with diluted hydrochloric acid or sodium hydroxide. After mechanical treatment a platination is necessary, therefore the electrode can be sent to SI Analytics.

Contamination on the sensor can be removed with the following procedure:

**Grease or oil**, carefully clean the glass part and the ring electrodes using warm water containing a dishwashing detergent and a sponge. In the case of **serious contamination**, you may also gently remove it with an abrasive powder. In the presence of **lime**, please place the parts shortly (five minutes) in acetic acid (10Vol%). To clean the protective cap, please use a small bottle brush or a cotton bud.

When using acids, leaches and solvents for cleaning, please make sure that they are compatible with the material of the shaft!

An optimum cleaning of the inner glass part of the LF 713 T, LF 713T-250 and LF 913 T-ID conductivity measuring cells is achieved with a tobacco pipe cleaner. The use of acids (exception: HF!), leaches and solvents is uncritical for these cells.

## Exemplified check and setting of the cell constant

To verify the cell constant, you need test solutions, for instance the SI Analytics ampoules set LF 995. Immerse the measuring cell, except the LF 4100+, in a suitable test solution by a minimum of 65 mm, for instance in KCl 0.01 mol/l. Then keep the temperature constant and set the corresponding conductivity value on the conductometer, for instance 1.413 mS/cm at 25°C for KCl 0.01 mol/l. For other solutions or different temperatures, please take the appropriate values from the table. To minimise the measuring uncertainty over the entire range of use, calibration should be performed both at low and high conductivities. The appropriate cell constant should be set as a function of the measurement range. Setting and reading off of the cell constant is done according to the operating instructions of the conductometer used.

Electrical conductivity mS/cm of KCl solutions as a function of temperature

Temp.(°C)	KCl concentration mol/l			
	0,001	0,01	0,1	1
18	0,127	1,225	11,19	98,24
19	0,13	1,251	11,43	100,16
20	0,133	1,278	11,67	102,09
21	0,136	1,305	11,91	104,02
22	0,138	1,332	12,15	105,94
23	0,141	1,359	12,39	107,89
24	0,144	1,386	12,64	109,84
25	0,147	1,413	12,88	111,8

## Quality

Each electrode must meet the strict quality requirements of final testing. The working life depends mainly on the usage conditions. Hydrofluoric acid, sodium hydroxide and hot phosphoric acid attack glass.

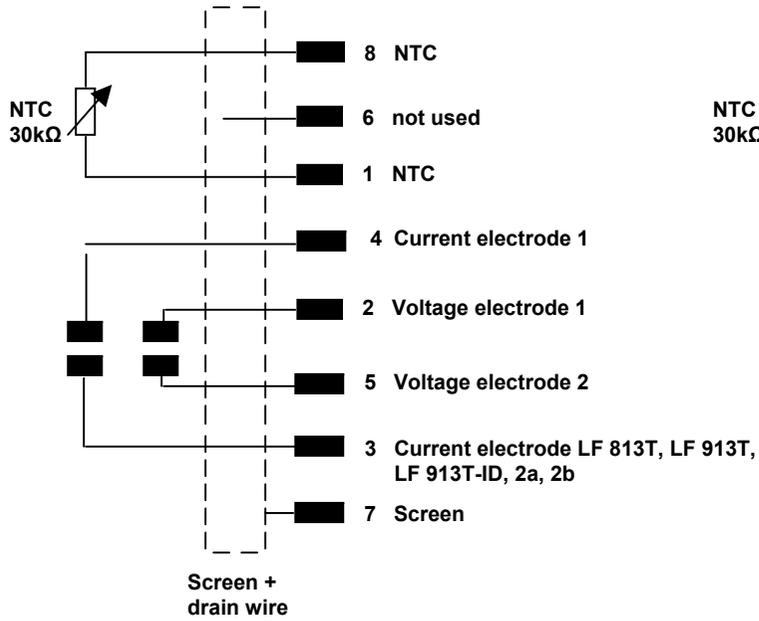
## Further information

Further informations can be found in the laboratory catalogue of SI Analytics GmbH.

Subject to technical amendment.

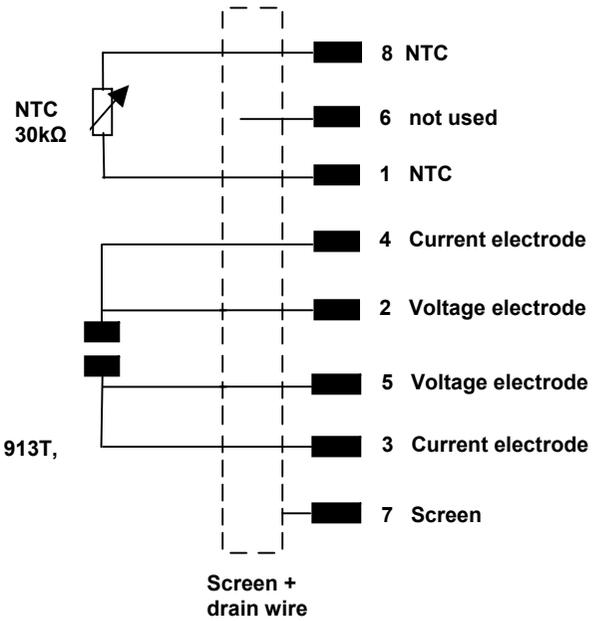
**Plug pin configuration**

4 pole conductivity cell: LF 613T, 713T, 713T-250  
 5 pole conductivity cell: LF 813T, 913T, 913T-ID



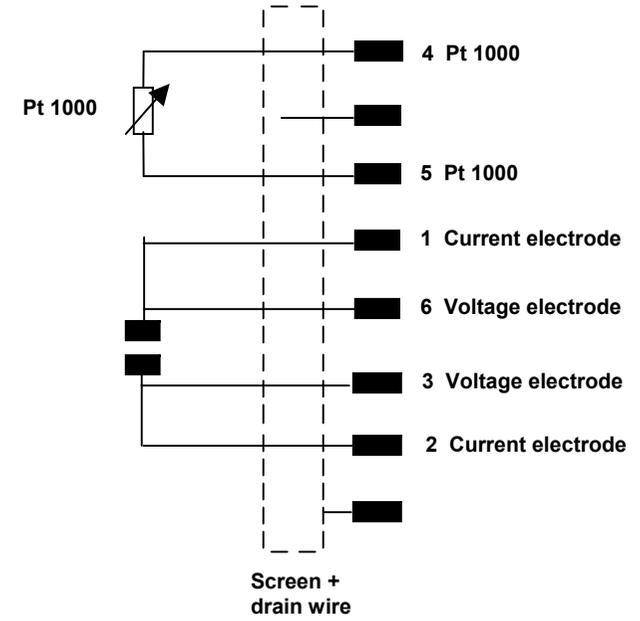
**Plug pin configuration**

2 pole conductivity cell: LF 513 T

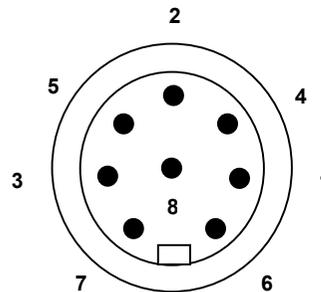


**Plug head configuration**

Configuration 2 pole conductivity cell:  
 LF 1100+, 1100T+, 4100+, 5100+, 5100T+



Plug, front view :



SMEK

View on top of electrode head

