



# Electrochemistry

# Electrochemistry

## The Perfect Combination

Instruments, aligned with the highest technological standards at an extremely competitive price.

A particular focus was put on easy handling during the daily routine.

pH  
cond  
multi

|                                                                                   |         |
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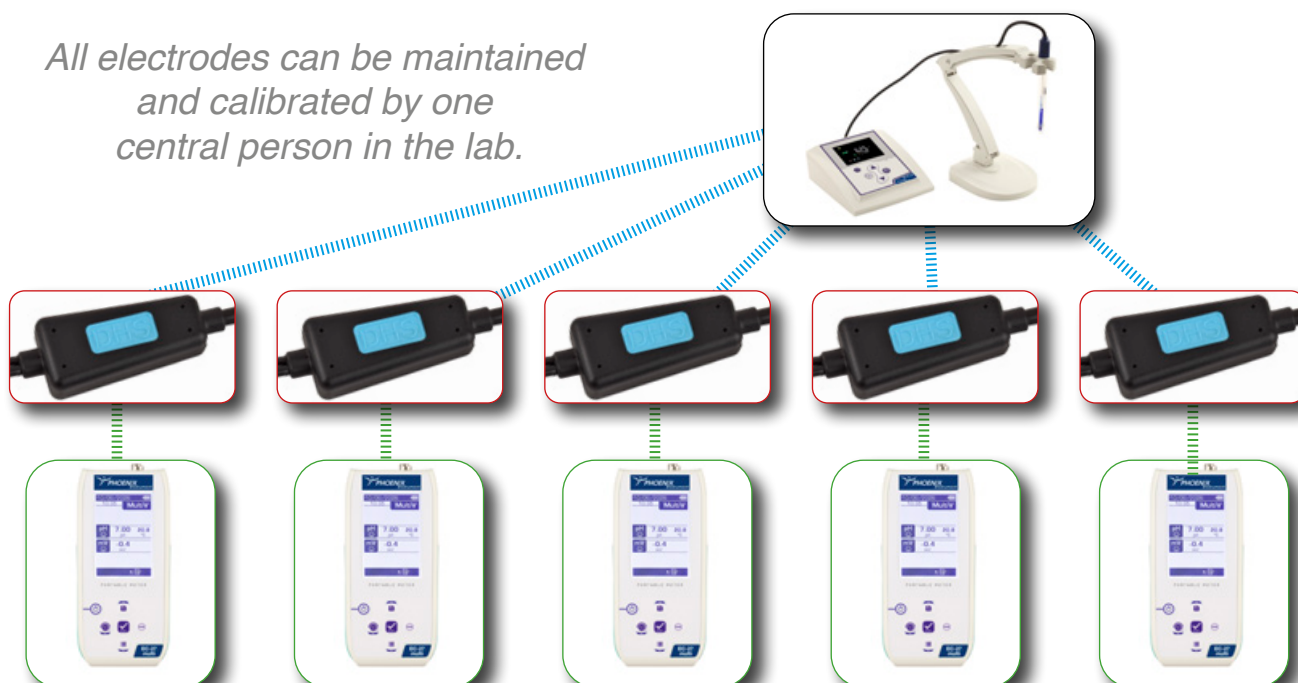
## DHS - The Digital Revolution

DHS, **Digital High Sensor**, is our new pH-sensor technology. These electrodes have an internal chip and stores all relevant calibration data, date of last calibration, slope, model and production batch.

If you connect a DHS-electrode with an DHS instrument, all data will be transferred from the chip into the instrument and the user can start immediately with its measurements without any additional calibrations. The new DHS-electrodes do not need an internal battery and can be connected by a normal BNC-connector.

All instruments equipped with the new **DHS Technology** can also be equipped with normal analog pH-electrodes. PH measurement was never easier.

*All electrodes can be maintained and calibrated by one central person in the lab.*



*In use, every electrode will be allocated to one pH-meter*



DHS - Digital High Sensor pH Electrode

## New portable pH-meter EC-22-pH and EC-27-pH

Phoenix Instrument is proud to present a new generation of portable measuring instruments that combines the highest precision with modern design. Developed for use in both laboratory settings and demanding outdoor conditions, these instruments feature a waterproof construction and a compact, elegant design.

The development of this innovative series has been significantly shaped by a combination of many years of technical experience, valuable input from the field, and the ever-growing demands of users. The result is a well-designed measuring instrument that brings functionality and user-friendliness to the highest level.

A large, high-resolution, backlit TFT display allows for a display of multiple parameters simultaneously. Intuitive operation ensures an efficient workflow, while selected models are equipped with advanced features such as an integrated data logger and a state-of-the-art USB-C interface for easy data transfer to a PC.

### EC-22 pH

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- DHS function, automatic detection of DHS and analog sensors
- Automatic calibration with up to 3 points, 2 user-defined points
- Automatic ORP 1-point calibration
- Simultaneous display of measured values
- Manual or automatic temperature compensation
- Memory for up to 100 data points
- Supplied in a sturdy carrying case with all accessories

### EC-27 pH

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- DHS function, automatic detection of DHS and analog sensors
- Automatic calibration with up to 5 points, 2 user-defined points
- Automatic ORP 1-point calibration
- Simultaneous display of up to 4 measured values
- Manual or automatic temperature compensation
- Manual and automatic Data logger, up to 1000 Data
- Individual labeling of measurement data (sensor ID / user ID / sample ID)
- 5 selectable operating languages
- Supplied in a sturdy case with all accessories

2 Years  
Instrument Warranty



EC-27 pH

## New portable pH-meter EC-22-pH and EC-27-pH

### Available Sets

|            |                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------|
| EC-22-pH-0 | Meter without electrode, incl. Temperature sensor, cable S7/BNC, pH-buffer, carrying case and accessories                         |
| EC-22-pH-1 | Meter with pH-electrode 201T, pH-buffer, carrying case and accessories                                                            |
| EC-22-pH-5 | Meter with pH-electrode 201T DHS, pH-buffer, carrying case and accessories                                                        |
| EC-27-pH-0 | Meter w/o pH-electrode, incl Temperature sensor, cable S7/BNC, pH-buffer, carrying case, accessories, Software PC-Link, USB-cable |
| EC-27-pH-1 | Meter with pH-electrode 201T and pH-buffer, carrying case, accessories, Software PC-Link, USB-cable                               |
| EC-27-pH-5 | Meter with pH-electrode 201T DHS and pH-buffer, carrying case, accessories, Software PC-Link, USB-cable                           |

### Accessories

|         |                                         |
|---------|-----------------------------------------|
| 1001612 | Power Supply for EC-27pH                |
| 1000962 | Softcase with adjustable shoulder strap |
| 1001312 | pH-mV Simulator incl. BNC-Cable         |



Set with case

| Technical data       | EC-22 pH                   | EC-27 pH                   |
|----------------------|----------------------------|----------------------------|
| Measuring Range (pH) | 0.00 - 14.00               | -2.00 - 16.00              |
| Resolution (pH)      | 0.1 / 0.01                 | 0.1 / 0.01 / 0.001 / 0.005 |
| Calibration Points   | 1-3                        | 1-5                        |
| Buffer recognition   | USA, NIST and user defined | USA, NIST and user defined |
| Measuring Range (mV) | ±1,000                     | -1,000 ... +1,900          |
| Resolution (mV)      | 1                          | 1 / 0.1                    |
| Measuring Range (T)  | 0 ... 100.0 °C             | -10 ... 110.0 °C           |
| Resolution (T)       | 0.1 °C                     | 0.1 °C                     |
| GLP                  | No                         | Yes                        |
| Calibration alarm    | No                         | Yes                        |
| Memory               | 100 Data                   | 1,000 Data                 |
| Interface            | No                         | USB-C                      |
| IP-Class             | IP 65                      | IP 65                      |
| Dimension (mm)       | 75 x 160 x 45              | 75 x 160 x 45              |
| Weight (gr)          | 320                        | 320                        |
| Weight               | 2 years                    | 2 years                    |

## Basic Benchtop pH-Meter EC-31 pH and EC-36 pH

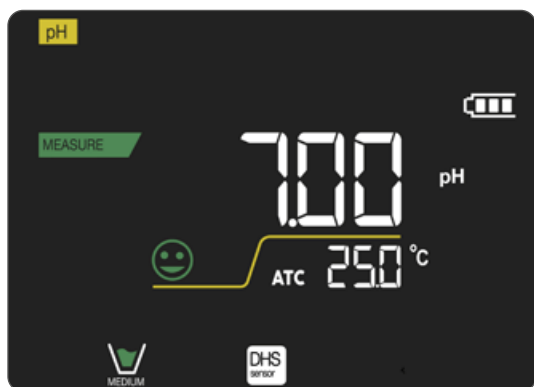
In the development of the new EC-31/EC-36 series, a particular focus was put on easy handling during the daily routine.

The high-resolution color display guides the user intuitively through the measurement and calibration process.

### EC-31 pH

- high-resolution color display, adjustable brightness
- DHS function, automatic recognition of DHS and analogue sensors
- Display of pH/mV and temperature values
- automatic pH calibration up to 3 points
- automatic ORP 1-point calibration
- selectable stability parameter (low-medium-high)
- automatic and manual temperature compensation
- Protection class IP 54

3 Years  
Instrument Warranty



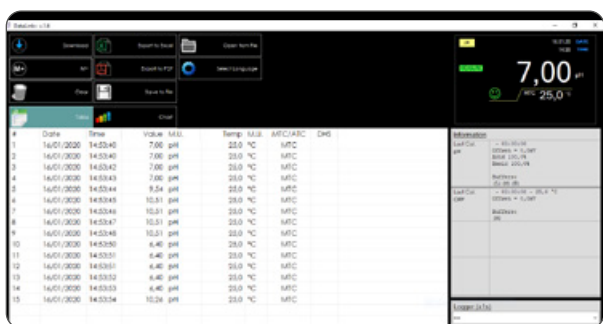
High Resolution Color Display EC-31 pH

| Technical Data        | EC-31 pH                   | EC-36 pH            |
|-----------------------|----------------------------|---------------------|
| Meas. range           | 0.00 ... 14.00 pH          | -2.00 ... 16.00 pH  |
| Resolution            | 0.1 / 0.01 pH              |                     |
| Calibration points    | 1 ... 3                    |                     |
| Buffer resolution     | USA, NIST and user defined |                     |
| Measuring range       | ±1,000 mV                  | -1,000 ... 1,900 mV |
| Resolution            | 1 mV                       | 0.1 / 1 mV          |
| Temp. measuring range | 0.0 ... 100 °C             | -10 ... 110 °C      |
| Resolution / accuracy | 0.1 / ± 0.5 °C             |                     |
| GLP                   | no                         | yes                 |
| Calibration alarm     | no                         | yes                 |
| Memory                | no                         | 1,000 data          |
| Interface             | no                         | Micro USB           |
| IP-class              | IP 54                      |                     |
| Dimension             | 170 x 145 x 60 mm          |                     |
| Weight                | 530 g                      |                     |

## Basic Benchtop pH-Meter EC-31 pH and EC-36 pH

### Additional for EC-36 pH

- GLP functions
- Data logger (automatic or manual) 1,000 data records
- Connection to PC via micro-USB
- free DATA LINK +



| #  | Date       | Time     | Value | Unit | Temp. Value | Temp. Unit | Info |
|----|------------|----------|-------|------|-------------|------------|------|
| 1  | 14.01.2020 | 14:53:40 | 7.00  | pH   | 25.0        | °C         | MFC  |
| 2  | 14.01.2020 | 14:53:40 | 7.00  | pH   | 25.0        | °C         | MFC  |
| 3  | 14.01.2020 | 14:53:42 | 7.00  | pH   | 25.0        | °C         | MFC  |
| 4  | 14.01.2020 | 14:53:43 | 7.00  | pH   | 25.0        | °C         | MFC  |
| 5  | 14.01.2020 | 14:53:44 | 8.24  | pH   | 25.0        | °C         | MFC  |
| 6  | 14.01.2020 | 14:53:45 | 10.31 | pH   | 25.0        | °C         | MFC  |
| 7  | 14.01.2020 | 14:53:46 | 10.31 | pH   | 25.0        | °C         | MFC  |
| 8  | 14.01.2020 | 14:53:47 | 10.31 | pH   | 25.0        | °C         | MFC  |
| 9  | 14.01.2020 | 14:53:48 | 10.31 | pH   | 25.0        | °C         | MFC  |
| 10 | 14.01.2020 | 14:53:50 | 6.40  | pH   | 25.0        | °C         | MFC  |
| 11 | 14.01.2020 | 14:53:51 | 6.40  | pH   | 25.0        | °C         | MFC  |
| 12 | 14.01.2020 | 14:53:51 | 6.40  | pH   | 25.0        | °C         | MFC  |
| 13 | 14.01.2020 | 14:53:52 | 6.40  | pH   | 25.0        | °C         | MFC  |
| 14 | 14.01.2020 | 14:53:53 | 6.40  | pH   | 25.0        | °C         | MFC  |
| 15 | 14.01.2020 | 14:53:54 | 10.29 | pH   | 25.0        | °C         | MFC  |

### DATA LINK +

The software allows remote control of the instrument in measure mode.

It shows all information relating to the instrument and calibrations, data export at the end of the analysis (also in Excel and PDF format) and the display of measurements in the table and in graphic.



3 Years  
Instrument Warranty

### Available Sets

- EC-31-pH-0 Kit without pH electrode, with temperature sensor, cable S7/BNC, pH buffer solution, electrode holder
- EC-31-pH-1 Kit includes pH electrode 201T, pH buffer solution, electrode holder
- EC-31-pH-5 Kit includes pH electrode 201T-DHS, pH buffer solution, electrode holder
- EC-36-pH-0 Kit without pH electrode, with temperature sensor, cable S7/BNC, pH buffer Solution, electrode holder
- EC-36-pH-1 Kit includes pH electrode 201T, pH buffer solution, electrode holder
- EC-36-pH-5 Kit includes pH electrode 201T-DHS, pH buffer solution, electrode holder

## Professional Benchtop pH Meter EC-45 pH

The large colored graphic display offers perfect readout and shows all information that you need about measurement, buffers used for calibration, electrode's life, GLP information and instrument's memory. Anyone can use this meter easily with its clear menu structure up to 5 languages.

The new **DHS-technology** allows the use of digital as well as analog electrodes. Up to 5-point pH calibration with automatic recognition for USA/NIST/DIN and User buffers. Icon support all calibration editing function with advanced electrode diagnostics.

Only a few keys allow the user to control all functions in an intuitive and easy way. The EC-45 pH can be delivered with a stirrer.

### EC-45 pH

- Display pH/mV and Temperature parameters simultaneously
- Resolution: 0.001 pH
- Automatic Calibration up to 5 points with automatic buffer recognition
- DHS-function, automatic recognition of DHS- and analog electrodes
- GLP and IQ-OQ manual available
- Large, colored graphic display
- Memory with re-call of last calibration date and time and information of electrode's life
- CAL DUE: set of calibration frequency for high quality of measurements
- Non-volatile memory holds up to 1,000 data points with date/ time in automatic (Data logger) or manual
- External keypad
- 2 x USB ports and 1 x RS-232 interface to transfer data at PC or printer and for external keyboard
- Instrument can be equipped with a magnetic stirrer
- IP54 rated housing handles splashes

3 Years  
Instrument Warranty



EC-45 pH with electrode arm and optional stirrer

## Professional Benchtop Meter EC-45 pH

### Available Sets

|            |                                                                                                                                                                                                    |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EC-45-pH-0 | Kit without pH electrode, with cable S7/BNC, temperature probe NT55, DHS-function, pH buffer solution pH 7 and pH 4, electrodes arm, keypad, power supply and accessories                          |
| EC-45-pH-1 | Complete kit includes pH electrode STANDARD, DHS-function, temperature probe NT55, S7/BNC 1 m cable, pH buffer solution pH 7 and pH 4, electrodes arm, power supply, keypad, accessories           |
| EC-45-pH-2 | Kit without pH electrode, with cable S7/BNC, temperature probe NT55, DHS-function, pH buffer solution pH 7 and pH 4, electrodes arm, power supply, keypad with magnetic stirrer                    |
| EC-45-pH-3 | Complete kit includes pH electrode STANDARD, temperature probe NT55, S7/BNC 1 m cable, DHS-function, pH buffer solution pH 7 and pH 4, electrodes arm, keypad, power supply, with magnetic stirrer |
| EC-45-pH-5 | Complete kit includes pH electrode STANDARD-DHS, DHS-function, temperature probe NT55, S7/BNC 1 m cable, pH buffer solution, electrodes arm, power supply, keypad and accessories                  |
| EC-45-pH-6 | Complete kit includes pH electrode STANDARD-DHS, DHS-function, temperature probe NT55, S7/BNC 1 m cable, pH buffer solution, electrodes arm, power supply, keypad, accessories, with stirrer       |
| 1001502    | Printer for EC-35 and EC-45                                                                                                                                                                        |



Optional Stirrer

| Technical Data     | EC-45 pH                             |
|--------------------|--------------------------------------|
| Meas. range        | -2 ... 20 pH                         |
| Resolution         | 0.1 / 0.01 / 0.001 pH                |
| Buffer solution    | 1...5 / USA, NIST, DIN, user defined |
| Calibration points | 1 ... 5                              |
| Buffer recognition | yes                                  |
| Measuring range    | ± 2,000 mV                           |
| Resolution         | 0.1 / 1 mV                           |
| Measuring range    | -30.0 ... 130.0 °C                   |
| Resolution         | ± 0.1 °C                             |
| DHS Electrode      | yes                                  |
| Buffer resolution  | 1,000 data                           |
| Timer              | yes                                  |
| GLP                | yes                                  |
| Interfaces         | 2 x USB, RS-232                      |
| Display            | Colored graphic display              |
| IP-class           | IP 54                                |
| Power supply       | Adapter 12 V DC                      |
| Weight             | 1,050 g, without stirrer             |
| Dimension          | 165 x 195 x 68 mm                    |

## New portable Conductivity meter EC-22-pH and EC-27-pH

Phoenix Instrument is proud to present a new generation of portable measuring instruments that combines the highest precision with modern design. Developed for use in both laboratory settings and demanding outdoor conditions, these instruments feature a waterproof construction and a compact, elegant design.

The development of this innovative series has been significantly shaped by a combination of many years of technical experience, valuable input from the field, and the ever-growing demands of users. The result is a well-designed measuring instrument that brings functionality and user-friendliness to the highest level.

A large, high-resolution, backlit TFT display allows for a display of multiple parameters simultaneously. Intuitive operation ensures an efficient workflow, while selected models are equipped with advanced features such as an integrated data logger and a state-of-the-art USB-C interface for easy data transfer to a PC.

### EC-22 cond

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- 2-Ring Cond-cell, ( $c = 0,1 - 1 - 10$ )
- 3 selectable cell constant
- Automatic calibration up to 4 points, user-defined points
- Manual or automatic Temperature compensation
- Selectable reference temperature (15...30 °C)
- Measuring of Conductivity, TDS, Salinity and Temperature
- Simultaneous display of measuring results
- Memory for up to 100 data points
- Supplied in a sturdy carrying case with all accessories

### EC-27 cond

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- 4-Pol Cond-Cell, ( $c = 0,55$ ) Measuring Range: 0,1  $\mu\text{S}$ ...1000,0 mS
- Automatic calibration up to 4 points, user-defined points
- Manual or automatic Temperature compensation
- Selectable reference temperature (15...30 °C)
- Measuring of Conductivity, TDS, Salinity and Temperature
- Simultaneous display of up to 4 Measuring results
- Manual and automatic Data logger, up to 1000 Data
- Custom labeling of measurement data (sensor ID / user ID / sample ID)
- 5 selectable user languages
- Supplied in a sturdy carrying case with all accessories



EC-27 cond

## New portable Conductivity meter EC-22-pH and EC-27-pH

### Available Sets

- EC-22-cond 0 Meter without Cell, incl. Calibration standards, carrying case and accessories
- EC-22-cond 1 Meter with Cond. cell 2301T, Calibration standards, carrying case and accessories
- EC-22-cond 2 Meter with Cond. Cell EPT 1 (for heavier soiling), Cal. standards, carrying case and accessories
- EC-27-cond-0 Meter without Cell, incl. Calibration standards, USB cable, Software PC-link, carrying case and accessories
- EC-27-cond-1 Meter with Cond. cell EPT 4 (0.1  $\mu$ S...1000.0 mS), Cal. standards, USB cable, Software PC-link, carrying case and accessories



Set with case

### Accessories

- 1001612 Power Supply for EC-27pH
- 1000962 Softcase with adjustable shoulder strap

| Technical data             | EC-22 cond                                          | EC-27 cond                                                         |
|----------------------------|-----------------------------------------------------|--------------------------------------------------------------------|
| Measuring Range (Cond)     | 0.01 $\mu$ S/cm ... 200 mS/cm                       | 0,01 $\mu$ S/cm ... 1,000 mS/cm                                    |
| Resolution (Cond)          | 0.01 / 0.1 / 1 $\mu$ S/cm                           | 0.01 / 0.1 / 1 $\mu$ S/cm                                          |
| Measuring Range (Salinity) | 0.1 ppm ... 100 ppt                                 | 0.1 ppm ... 100 ppt                                                |
| Measuring Range (TDS)      | 0.1 mg/l ... 200 g/l                                | 0.1 mg/l ... 500 g/l                                               |
| Conversion factor          | Linear (0,4 ... 1)                                  | Linear (0.4 ... 1) / NaCl / KCl / 442                              |
| Measuring Range (Temp)     | 0 ... +100 °C                                       | -10 ... +110 °C                                                    |
| Readability / Accuracy     | 0.1 / $\pm$ 0,5 °C                                  | 0.1 / $\pm$ 0.5 °C                                                 |
| Calibration points         | 1...4                                               | 1...5                                                              |
| Cal. Standards             | 84, 1413 $\mu$ S / 12.88, 111.8 mS and user defined | 5.00 $\mu$ S / 84, 1413 $\mu$ S / 12.88, 111.8 mS and user defined |
| GLP                        | No                                                  | Yes                                                                |
| Calibration alarm          | No                                                  | Yes                                                                |
| Memory                     | 100 Data                                            | 1000 Data                                                          |
| Interface                  | No                                                  | USB-C                                                              |
| IP-Class                   | IP 65                                               | IP 65                                                              |
| Dimension                  | 75 x 160 x 45 mm                                    | 75 x 160 x 45 mm                                                   |
| Warranty                   | 2 years                                             | 2 years                                                            |

## Basic Benchtop Conductivity EC-31 cond and EC-36 cond

In the development of the new EC-31/EC-36 series, particular focus was put on easy handling during the daily routine. The high-resolution color display guides the user intuitively through the measurement and calibration process.

### EC-31 cond

- high-resolution colour display, adjustable brightness
- Display of Conductivity/TDS and temperature values
- automatic conductivity calibration up to 5 points
- selectable stability parameter (low-medium-high)
- automatic and manual temperature compensation
- Protection class IP 54

3 Years  
Instrument Warranty



EC-31 cond

### Additional for EC-36 cond

- GLP functions
- Data logger (automatic or manual) 1,000 data records
- Connection to PC via micro-USB
- free DATA LINK +

### Available Sets

- EC-31-cond-0** Kit without cell, with standard calibration solutions, cell holder and accessories
- EC-31-cond-1** Complete kit includes cond. Cell 2301T with ATC, cable length 1m and BNC plug, standard calibration solutions, cell holder and accessories
- EC-36-cond-0** Kit without cell, with standard calibration solutions, power supply, software PC-Link, USB cable, cell holder and accessories
- EC-36-cond-1** Complete kit includes cond. Cell 2301T with ATC, cable length 1m and BNC plug, Standard calibration solutions, power supply, software PC-Link, USB cable, cell holder and accessories

| Modell                   | EC-31 cond                    | EC-36 cond     |
|--------------------------|-------------------------------|----------------|
| Meas. range conductivity | 0.00 ... 200 mS               |                |
| Accuracy                 | 0.1/1 µS; 0.01/0.,1 mS        |                |
| Calibration points       | 1 ... 5                       |                |
| Selectable cell constant | 0.1 – 1 – 10 cm <sup>-1</sup> |                |
| Temp. range              | 0.0 ... 100 °C                | -10 ... 110 °C |
| Resolution / accuracy    | 0.1 / ± 0.5 °C                |                |
| TDS meas. range          | 0.1 mg/l ... 200 g/l          |                |
| GLP                      | no                            | yes            |
| Calibration alarm        | no                            | yes            |
| Memory                   | no                            | 1,000 data     |
| Interface                | no                            | Micro USB      |
| IP class                 | IP 54                         |                |
| Dimension                | 185 x 85 x 45 mm              |                |
| Weight                   | 530 g                         |                |

## Professional Conductivity Benchtop Meter EC-45 cond

The large colored graphic display offers perfect readout and shows all information that you need about measurement, buffers used for calibration, cell condition, GLP information and instrument's memory. Anyone can use this meter easily with its clear menu structure up to 5 languages.

Up to 4 calibration points with buffer recognition. Icon support for all calibration functions and advanced electrode diagnostics. Easy to calibrate.

All functions can be controlled in an intuitive and easy way.

The instrument can be delivered with a stirrer.

3 Years  
Instrument Warranty



EC-45 cond  
with stand and optional stirrer

### Available Sets

- EC-45 cond 0 Kit without conductivity cell, standard solution 1413  $\mu\text{S}$  and 12,88 mS, cell holder and accessories
- EC-45 cond 1 Kit includes conductivity cell Glass-Pt VPT80/1, standard solution 1413  $\mu\text{S}$  and 12,88 mS, cell holder, power supply and accessories
- EC-45 cond 2 Kit without, with standard solution 1413  $\mu\text{S}$  and 12,88 mS, cell holder and accessories, **with magnetic stirrer**
- EC-45 cond 3 Kit includes cell Glass-Pt VPT80/1, standard solution 1413  $\mu\text{S}$  and 12,88 mS, cell holder and accessories, **with magnetic stirrer**

## Professional Conductivity Benchtop Meter EC-45 cond

### EC-45 cond

- Display COND/TDS, Salinity and Temperature simultaneously
- Resolution: automatic scale
- GLP-conform
- external keypad
- Selectable cell constant allows for use with 2 plate cell
- Automatic calibration 1 to 4 points between 4 conductivity standard values
- Manual-Calibration up to 1 points (User defined)
- Large colored graphic display with indication of Calibration Standards and measurement's stability
- Automatic and manual compensation of temperature with reference value 15 ... 30 °C
- Memory with re-call of last calibration date and time and information of cell constant
- CAL DUE: set of calibration frequency for high quality of measurements
- Non-volatile memory holds up to 1,000 data points with date and time Data logger
- 2 x USB ports and 1 x RS-232 interface to transfer data, software PC-Link to download data
- Instrument can be delivered with a magnetic stirrer
- IP54 Protection

3 Years  
Instrument Warranty

| Technical Data           | EC-45 cond                                                         |
|--------------------------|--------------------------------------------------------------------|
| Mesuring range (cond)    | 0.00 - 20.00 - 200.0 - 2,000 µS<br>2.00 - 20.00 - 200.0 - 1,000 mS |
| Resolution (cond)        | Automatic full scale                                               |
| Calibration Standards    | 84, 1413 µS, 12.88, 111.8 mS, user                                 |
| Calibration points       | 1 ... 4                                                            |
| Selectable cell constant | 0.55 (4 ring) - 0.1 - 1 - 10                                       |
| Cell type                | 4 rings - 2 rings                                                  |
| Reference temperature    | 15 ... 30 °C                                                       |
| Temp. compensation       | 0.00 ... 10.00 °C                                                  |
| Measuring range          | -30.0 ... 130.0 °C                                                 |
| Resolution               | ± 0.5 °C                                                           |
| TDS-measuring range      | 0 ... 500 g/l                                                      |
| TDS-Faktor               | 0.40 ... 1.00                                                      |
| Salinity                 | 0.01 ... 100 ppt                                                   |
| Resistivity              | 1 ... 10 MΩ                                                        |
| Memory                   | 1,000 data                                                         |
| Timer                    | yes                                                                |
| GLP                      | yes                                                                |
| Interfaces               | 2 x USB, RS-232                                                    |
| Display                  | Color graphic display                                              |
| Ip protection            | IP 54                                                              |
| Power supply             | Adapter 12 V DC                                                    |
| Weight                   | 1,050 g, without stirrer                                           |
| Dimension                | 165 x 195 x 68 mm                                                  |



Magnetic Stirrer (optional)



## New portable Multimeter EC-22-multi and EC-27-multi

Phoenix Instrument is proud to present a new generation of portable measuring instruments that combines the highest precision with modern design. Developed for use in both laboratory settings and demanding outdoor conditions, these instruments feature a waterproof construction and a compact, elegant design.

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A large, high-resolution, backlit TFT display allows for a display of multiple parameters simultaneously. Intuitive operation ensures an efficient workflow, while selected models are equipped with advanced features such as an integrated data logger and a state-of-the-art USB-C interface for easy data transfer to a PC.

### EC-22 multi

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- DHS function, automatic detection of DHS and analog sensors
- Automatic calibration with up to 3 points, 2 user-defined points
- 2-Ring Conductivity cell, (c = 0,1 – 1 – 10)
- 3 selectable cell constant
- Automatic calibration up to 4 points, 1 user-defined point
- Manual or automatic Temperature compensation
- Selectable Reference temperature (15...30 °C)
- Measurement of Conductivity, TDS, Salinity and Temperature
- Simultaneous display of measuring values
- Manual memory of up to 100 Data
- Delivery in a sturdy carrying case with all accessories

### EC-27 multi

- High-resolution, backlit TFT display
- Rugged, waterproof design (IP-65)
- 2-Ring LF-Cell, (c = 0,1 – 1 – 10)
- Automatic Calibration up to 4 points, 1 user-defined point
- Manual or automatic Temperature compensation
- Selectable Referencetemperatura (15...30 °C)
- Measurement of Conductivity, TDS, Salinity and Temperature
- Simultaneous display of 4 measuring values
- Manual memory of up to 1000 Data
- Individual labeling of measurement data (sensor ID / user ID / sample ID)
- 5 selectable operating languages
- Supplied in a sturdy case with all accessories

2 Years Warranty



EC-27 multi

Electrochemistry

## Basic Benchtop Multi Meter EC-31 multi and EC-36 multi

In the development of the new EC-31/EC-36 series, a particular focus was put on easy handling during the daily routine. The high-resolution color display guides the user intuitively through the measurement and calibration process.

### EC-31 multi

- high-resolution colour display, adjustable brightness
- Display of pH/mV, Conductivity/TDS and temperature values
- automatic Conductivity calibration up to 5 points
- automatic pH calibration up to 3 points
- automatic ORP 1-point calibration
- selectable stability parameter (low-medium-high)
- automatic and manual temperature compensation
- Protection class IP 54

### Additional for EC-36 multi

- GLP functions
- Data logger (automatic or manual)  
1,000 data records
- Connection to PC via micro-USB
- free DATA LINK +



3 Years  
Instrument Warranty

### Available Sets

- EC-31-multi-0** Kit without pH-electrode, with conductivity cell 2301T, with standard calibration solutions, Temperature sensor, cable S7/BNC, pH buffer solutions, electrode holder
- EC-31-multi-1** Complete kit include pH electrode 201T and cond. Cell 2301T with ATC, both cable length 1m and BNC plug, standard calibration solutions, pH buffer solutions, electrode holder
- EC-31-multi-5** Complete kit include pH electrode 201T-DHS and cond. Cell 2301T with ATC, both cable length 1m and BNC plug, standard calibration solutions, pH buffer solutions, electrode holder
- EC-36-multi-0** Kit without pH-electrode, with conductivity cell 2301T, with standard calibration solutions, Temperature sensor, cable S7/BNC, pH buffer solutions, electrode holder
- EC-36-multi-1** Complete kit include pH electrode 201T and cond. Cell 2301T with ATC, both cable length 1m and BNC plug, standard calibration solutions, pH buffer solutions, electrode holder
- EC-36-multi-5** Complete kit include pH electrode 201T-DHS and cond. Cell 2301T with ATC, both cable length 1m and BNC plug, standard calibration solutions, pH buffer solutions, electrode holder

| Technical Data           | EC-31 multi                   | EC-36 multi        |
|--------------------------|-------------------------------|--------------------|
| Measuring range          | 0.00 ... 14.00 pH             | -2.00 ... 16.00 pH |
| Accuracy                 | 0.1 / 0.01 pH                 |                    |
| Calibration points       | 1 ... 3                       |                    |
| Buffer resolution        | USA, NIST and user defined    |                    |
| Measuring range cond     | 0.00 ... 200 mS               |                    |
| Accuracy cond            | 0.1/1 µS; 0.01/0.1 mS         |                    |
| Calibration points       | 1 ... 5                       |                    |
| Selectable cell constant | 0.1 – 1 – 10 cm <sup>-1</sup> |                    |
| Temperature meas. range  | 0.0 ... 100 °C                | -10 ... 110 °C     |
| Resolution / accuracy    | 0.1 / ± 0.5 °C                |                    |
| TDS meas. range          | 0.1 mg/l ... 200 g/l          |                    |
| GLP                      | no                            | yes                |
| Calibration alarm        | no                            | yes                |
| Memory                   | no                            | 1,000 data         |
| Interface                | no                            | Micro USB          |
| IP-class                 | IP 54                         |                    |
| Dimension                | 185 x 85 x 45 mm              |                    |
| Weight                   | 530 g                         |                    |

## Professional Benchtop Multiparameter Meter EC-45 multi

The large colored graphic display shows all necessary information about measurement, calibration, standards, cell condition, GLP. Anyone can use this meter easily with its intuitive menu available in up to 5 languages.

The new DHS-technology allows the use of digital as well as analog electrodes. Up to 5-point pH-calibration and up to 4-point Conductivity calibration with automatic recognition of all standards. Icon support for all calibration functions and advanced electrode diagnostics.

All functions can be controlled in an intuitive and easy way. The instrument can be delivered with a stirrer.

3 Years  
Instrument Warranty



EC-45 multi with Stirrer (optional)

## Professional Benchtop Multiparameter EC-45 multi

### EC-45 multi

- Display pH/mV, COND/TDS, Salinity and Temperature simultaneously
- Resolution: 0.1-0.001 pH; Auto range for Cond
- GLP-conform
- Selectable cell constant allows for use with 2 plate cell
- Large colored graphic display with indication of Calibration Buffers and measurement's stability
- Indication stability of the measurement with icon
- Memory with re-call of last calibration date and time and information of electrode's life
- CAL DUE: set of calibration frequency for high quality of measurements
- Stability Parameter (Low-Med-High) for high accuracy measurement
- Non-volatile memory holds up to 1,000 data points with date and time in automatic (Data logger) or manual
- 2 x USB ports to transfer data at PC or printer and for external keyboard
- Software PC-Link to download data (included)
- external keypad
- Instrument can be delivered with magnetic stirrer
- IP54 protection

3 Years  
Instrument Warranty



### Available Sets

#### EC-45-multi-2

Kit without pH electrode and cell, with cable S7/BNC, temp. probe NT55, pH buffer solution pH 7 and pH 4, conductivity solution 1413  $\mu$ S and 12,88 mS, DHS-function, Keypad and accessories, **with magnetic stirrer**

#### EC-45-multi-3

Kit included pH electrode XS STANDARD S7, 1 mt cable S7/BNC, cell glass VPT 80/1 with ATC, DHS-function, pH buffer solution pH 7 and pH 4, standard conductivity solution 1413  $\mu$ S and 12,88 mS, keypad and accessories, **with magnetic stirrer**

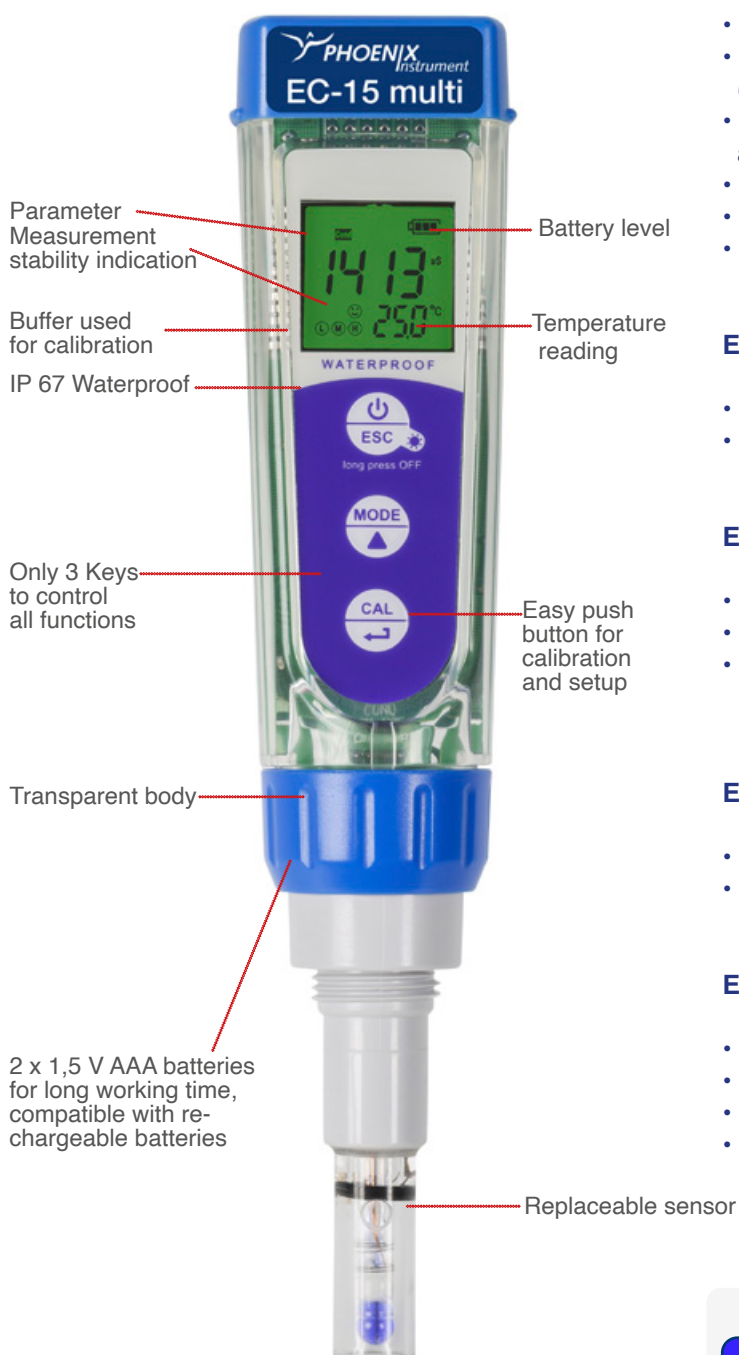
#### EC-45-multi-5

Kit included pH electrode XS STANDARD-DHS S7, 1 mt cable S7/BNC, cell glass VPT 80/1 with ATC, DHS-function, pH buffer solution pH 7 and pH 4, standard conductivity solution 1413  $\mu$ S and 12,88 mS, keypad and accessories, **with magnetic stirrer**

| Technical Data           | EC-45 multi                                                             |
|--------------------------|-------------------------------------------------------------------------|
| Measuring range          | -2 ... 20 pH                                                            |
| Accuracy                 | 0.1 / 0.01 / 0.001 pH                                                   |
| Buffer                   | 1 ... 5 /USA, NIST, DIN, User                                           |
| Calibration points       | 1 ... 5                                                                 |
| Buffer recognition       | yes                                                                     |
| Meas. range              | $\pm$ 2,000 mV                                                          |
| Accuracy                 | 0.1 / 1 mV                                                              |
| Meas. range              | -20.0 ... 120.0 °C                                                      |
| Accuracy                 | $\pm$ 0.5 °C                                                            |
| DHS-Electrode            | yes                                                                     |
| Meas. range cond         | 0.00 - 20.00 - 200.0 - 2,000 $\mu$ S<br>2.00 - 20.00 - 200.0 - 1,000 mS |
| Accuracy cond            | Automatic full scale                                                    |
| Buffer                   | 84, 1413 $\mu$ S, 12.88, 111.8 mS, User                                 |
| Calibration points       | 1 ... 4, user                                                           |
| Selectable cell constant | 0.1 - 1 - 10 cm <sup>-1</sup>                                           |
| Reference temperature    | 15 ... 30 °C                                                            |
| Temp. compensation       | 0.00 ... 100.0 °C                                                       |
| TDS-Meas. range          | 0 ... 500 g/l                                                           |
| TDS-Factor               | 0.40 ... 1.00                                                           |
| Salinity                 | 0.01 ... 100 ppt                                                        |
| Resistivity              | 0 ... 20 M $\Omega$                                                     |
| Memory                   | 1,000 data                                                              |
| Timer                    | yes                                                                     |
| GLP                      | yes                                                                     |
| Interface                | 2 x USB, RS-232                                                         |
| Display                  | Color graphic display                                                   |
| IP-class                 | IP 54                                                                   |
| Power supply             | Adapter 12 V DC                                                         |
| Dimension                | 165 x 195 x 68 mm                                                       |
| Weight                   | 1,050 g, without stirrer                                                |

## Tester Serie EC-15

with replaceable sensor



- automatic calibration function incl. stability icon
- 3-color backlit LCD-display (Measurement – Calibration – Alarm)
- pH-electrodes and conductivity cells also available with cable
- IP 67 waterproof
- easy replaceable sensor
- 2 x 1,5 V AAA Batteries, Display of battery level

### EC-15pH pH / mV / °C

- Measuring range: -2 ... 16 pH, Resolution: 0.01 pH
- 1 ... 3 points calibration

### EC-15pH Food pH / mV / °C

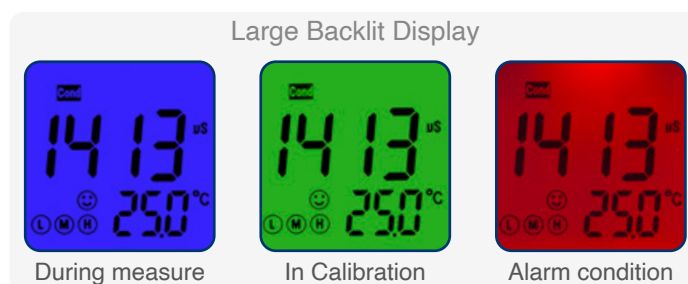
- Measuring range: -2 ... 16 pH, Resolution 0.01 pH
- 1 ... 3 points calibration
- with replaceable spear pH electrode

### EC-15-COND Cond / TDS / Salinity / °C

- Cond scale: 0 ... 200  $\mu$ S - 0 ... 2,000  $\mu$ S - 0 ... 20 mS
- 1 ... 3 points calibration

### EC-15-Multi pH / mV / Cond / TDS / Salinity / °C

- Measuring range: -2 ... 16 pH, Resolution 0.01 pH
- 1 ... 3 points calibration
- COND scale: 0 ... 200  $\mu$ S - 0 ... 2,000  $\mu$ S - 0 ... 20 mS
- 1 ... 3 points calibration





Box EC-15 cond

## Tester Serie EC-15

with replaceable sensor

### Available Sets

#### EC-15-pH eco

Tester, 1 extra cap, batteries

#### EC-15-pH / pH Food

Tester, 1 extra cap, pH 7 and pH 4 buffer solution, storage solution, neck strap, paper towel, 2x 1.5V AAA batteries, box

#### EC-15-Cond eco

Tester, 1 extra cap, batteries

#### EC-15-Cond

Tester, 1 extra cap, 1413 $\mu$ S and 12,88mS cond. standard solution, neck strap, paper towel, 2x 1.5V AAA batteries, box

#### EC-15-Multi

Tester, 1 extra cap, pH 7 and pH 4 buffer solution, storage solution, 1413 $\mu$ S cond. standard solution, neck strap, paper towel, 2x 1.5V AAA batteries, box

| Technical Data                 | EC-15pH / Food                         | EC-15 Cond                                    | EC-15-Multi    |
|--------------------------------|----------------------------------------|-----------------------------------------------|----------------|
| pH Meas. range                 | -2 ... 16 pH                           | -                                             | -2 ... 16 pH   |
| pH resolution                  | 0.01 pH                                | -                                             | 0.01 pH        |
| Calibration points             | 1 ... 3                                | -                                             | 1 ... 3        |
| Electrode condition alarm      | yes                                    | yes                                           | yes            |
| Stability meas. indication     | yes                                    | yes                                           | yes            |
| mV meas. range                 | $\pm 1,000$ mV                         | -                                             | $\pm 1,000$ mV |
| mV resolution                  | 0.1 / 1 mV                             | -                                             | 0.1 / 1 mV     |
| Cond meas. range               | -                                      | 0 - 200 $\mu$ S; 0 - 2,000 $\mu$ S; 0 - 20 mS |                |
| Cond accuracy                  | -                                      | Automatic scale                               |                |
| Calibration points             | -                                      | 1 ... 3                                       |                |
| TDS meas. range                | -                                      | 0.1 ppm ... 10 ppt                            |                |
| TDS relative accuracy          | -                                      | $\pm 1\%$ full scale                          |                |
| Temperature range              |                                        | 0 ... 50 °C                                   |                |
| Resolution                     |                                        | 0.1 °C                                        |                |
| Dimension ( $\varnothing$ x L) | 35 x 175 mm (pH)<br>35 x 210 mm (Food) | 35 x 175 mm                                   | 35 x 175 mm    |
| Weight                         |                                        | 130 g                                         |                |



## Tester Serie EC-10



EC-10 pH

EC-10 cond



Display pH



Display Cond

### Available Sets

#### EC-10-pH

Tester, 1 extra cap, pH 7 and pH 4 buffer solution, storage solution, neck strap, paper towel, 2 x 1.5 V AAA batteries, carrying case.

#### EC-10-Cond

Tester, 1 extra cap, 1x 55 ml 1413  $\mu$ S and 12.88 mS cond. standard solution, neck strap, paper towel, 4 x 1.5 V AAA batteries, carrying case.

#### EC-10-pH-Eco

Tester, 1 extra cap, batteries

#### EC-10-Cond-Eco

Tester, 1 extra cap, batteries

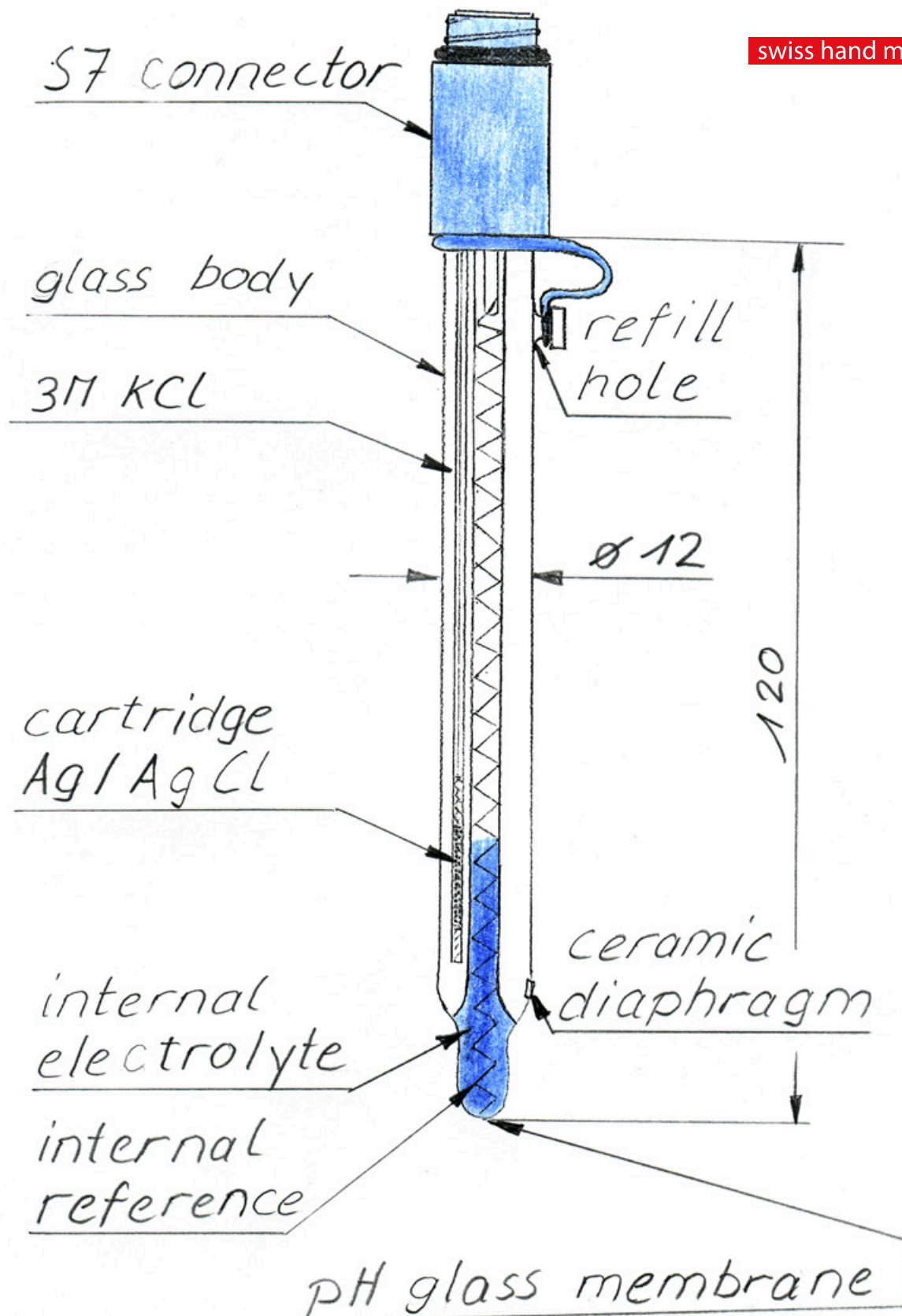
### EC-10

- Large LCD display
- IP 67 waterproof protection
- Buffers used for calibration indication
- Measurement stability indicator
- Automatic temperature compensation
- 4 x 1.5 V AAA batteries for long working time

*compatible with rechargeable batteries*

| Technical Data              | EC-10pH         | EC-10Cond               |
|-----------------------------|-----------------|-------------------------|
| pH Meas. range              | 0 ... 14        |                         |
| pH resolution               | 0.1             |                         |
| Calibration points          | 1 ... 2         |                         |
| Buffer recognition          | 3 USA buffer    |                         |
| Electrode condition alarm   |                 | yes                     |
| Cond resolution             |                 | automatic scale         |
| Calibration points cond     |                 | 1 ... 2                 |
| Cal. standard recognition   |                 | 1.413 $\mu$ S, 12.88 mS |
| TDS meas. range             |                 | 0.01 ... 199,9 ppm      |
| Auto off                    | after 8 minutes |                         |
| Warranty                    | 6 months        |                         |
| Dimension $\varnothing$ x L | 35 x 175 mm     |                         |
| Weight                      | 120 g           |                         |

# Electrodes



## Field of application

|                               | Gel | Polymer | Polymer Tip | Standard | Polymer Plast/201T | Standard HA | Flat | Standard HF | Food | 2 Pore Slim | 2 Pore | 2 Pore F | Food Slim | Semimicro | Micro | Micro P | Flow |
|-------------------------------|-----|---------|-------------|----------|--------------------|-------------|------|-------------|------|-------------|--------|----------|-----------|-----------|-------|---------|------|
| aqueous Emulsionen            |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| aqueous Suspensionen          |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Bread- Pasta                  |     |         | •           |          |                    |             |      |             | •    | •           | •      | •        | •         |           |       |         |      |
| Brine                         | •   | •       | •           | •        | •                  |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Butter                        |     |         |             |          |                    |             |      |             | •    | •           | •      | •        | •         |           |       |         |      |
| Cheese                        |     |         |             |          |                    |             |      |             |      | •           | •      | •        | •         |           |       |         |      |
| Cosmetics                     |     | •       | •           | •        |                    | •           |      |             | •    |             |        |          |           |           |       |         | •    |
| Cream                         |     | •       | •           |          |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Detergents                    | •   | •       | •           | •        | •                  | •           |      |             | •    |             |        |          |           |           |       |         | •    |
| Fruit juice                   |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Fruits and Vegetables         |     |         |             |          |                    |             |      |             |      | •           | •      | •        | •         |           |       |         |      |
| Galvanic exhaust              |     | •       | •           |          |                    | •           |      |             |      |             |        |          |           |           |       |         | •    |
| Jam                           |     | •       | •           |          |                    |             |      |             | •    |             | •      |          |           |           |       |         | •    |
| Leather                       |     |         |             |          |                    |             | •    |             |      |             |        |          |           |           |       |         |      |
| Mayonnaise                    |     |         |             |          |                    |             |      |             | •    |             | •      |          |           |           |       |         | •    |
| Meat                          |     |         |             |          |                    |             |      |             | •    | •           | •      | •        | •         |           |       |         |      |
| Milk                          |     |         |             |          |                    |             |      |             | •    | •           | •      | •        | •         |           |       |         |      |
| Paint (waterbased)            |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Paint                         |     |         |             | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Sample containing proteins    |     | •       | •           |          |                    |             |      |             | •    |             | •      |          | •         |           |       | •       |      |
| Sample high alkalinity        |     |         |             |          |                    | •           |      |             |      |             |        |          |           |           |       |         |      |
| Sample high temperature*      |     |         |             | •        |                    | •           |      |             | •    |             |        |          |           |           |       |         |      |
| Sample small volume           |     |         |             |          |                    |             | •    |             |      |             |        |          |           | •         | •     | •       |      |
| Sample with hydrofluoric Acid |     |         |             |          |                    |             |      | •           |      |             |        |          |           |           |       |         |      |
| Semi-aqueous suspensions      |     |         |             |          |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Soap liquid                   |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Soil                          |     |         | •           |          |                    |             |      |             |      | •           | •      | •        | •         |           |       |         | •    |
| Solutions low-ionic strength  |     |         |             |          |                    |             |      |             |      |             |        |          |           |           |       |         | •    |
| Surfaces                      |     |         |             |          |                    |             | •    |             |      |             |        |          |           |           |       |         |      |
| Titration                     |     |         |             | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Titration, non aqueous        |     |         |             |          |                    |             |      |             |      |             |        |          |           |           |       |         | •    |
| TRIS-buffer                   |     |         |             | •        |                    |             |      |             |      |             |        |          |           |           |       |         | •    |
| Viscous samples               |     | •       | •           |          |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Waste and Sewage              |     | •       | •           |          | •                  | •           |      |             |      |             |        |          |           |           |       |         | •    |
| Water, distilled              |     |         |             |          |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Water, drinking               | •   | •       | •           | •        | •                  |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Wine                          |     | •       | •           | •        |                    |             |      |             | •    |             |        |          |           |           |       |         | •    |
| Yoghurt                       |     | •       | •           |          |                    |             |      |             | •    | •           | •      | •        | •         |           |       |         | •    |

\* short time 100 °C

## Electrodes for general laboratory application

### GEL

|                    |             |
|--------------------|-------------|
| Shaft Material     | Glass       |
| Connector          | S7 Head     |
| Electrolyte        | Gel         |
| Diaphragm          | Ceramic     |
| Diameter           | 12 mm       |
| Length             | 120 mm      |
| pH-measuring range | 0...14      |
| Temperature range  | -10...60 °C |



Model no. 1000203

GEL

### POLYMER

|                    |             |
|--------------------|-------------|
| Shaft Material     | Glass       |
| Connector          | S7 Head     |
| Electrolyte        | Polymer     |
| Diaphragm          | Open pore   |
| Diameter           | 12 mm       |
| Length             | 120 mm      |
| pH-measuring range | 0...14      |
| Temperature range  | -10...80 °C |



Model no. 1000223

POLYMER

### POLYMER TIP

|                    |               |
|--------------------|---------------|
| Shaft Material     | Glass         |
| Connector          | S7 Head       |
| Electrolyte        | Polymer       |
| Diaphragm          | 2 x Open pore |
| Diameter           | 12 mm         |
| Length             | 120 mm        |
| pH-measuring range | 0...14        |
| Temperature range  | -10...80 °C   |



Model no. 1000443

POLYMER TIP

### STANDARD

|                    |              |
|--------------------|--------------|
| Shaft Material     | Glass        |
| Connector          | S7 Head      |
| Electrolyte        | 3M KCl       |
| Diaphragm          | Ceramic      |
| Diameter           | 12 mm        |
| Length             | 120 mm       |
| pH-measuring range | 0...14       |
| Temperature range  | -10...100 °C |



Model no. 1000363

STANDARD

## More standard versions

### STANDARD HA

like Standard,  
minimal Alkali-error



Model no. 1000423

STANDARD HA

### STANDARD HF

like Standard,  
suitable for samples with HF



Model no. 1000433

STANDARD HF

More versions with fix cable or temperature probe on demand

## Electrodes for general laboratory application

### POLYMER PLAST

|                    |                                  |
|--------------------|----------------------------------|
| Shaft Material     | Epoxy                            |
| Connector          | S7 Head                          |
| Electrolyte        | Polymer                          |
| Diaphragm          | 1 x Ceramic and<br>1 x open pore |
| Diameter           | 12 mm                            |
| Length             | 120 mm                           |
| pH-measuring range | 0...14                           |
| Temperature range  | 0...60 °C                        |



Model no. 1000493

POLYMER PLAST

### POLYMER PLAST BNC

|           |               |
|-----------|---------------|
| Connector | Fix cable BNC |
|-----------|---------------|



Model no. 1000503

POLYMER PLAST BNC

### POLYMER PLAST DIN

|           |               |
|-----------|---------------|
| Connector | Fix cable DIN |
|-----------|---------------|



Model no. 1000513

POLYMER PLAST DIN

### 201T

|                    |                                  |
|--------------------|----------------------------------|
| Shaft Material     | Epoxy                            |
| Connector          | Fix cable                        |
| Electrolyte        | Gel                              |
| Diaphragm          | 1 x Ceramic and<br>1 x open pore |
| Diameter           | 12 mm                            |
| Length             | 120 mm                           |
| pH-measuring range | 0...14                           |
| Temperature range  | 0...60 °C                        |
| Temperature probe  | yes, 30 kΩ with<br>Cinch plug    |



Model no. 1002002

201T

### FLAT

|                    |                              |
|--------------------|------------------------------|
| Shaft Material     | Glass                        |
| Connector          | S7 Head                      |
| Electrolyte        | Polymer                      |
| Diaphragm          | Teflon with<br>3 x open pore |
| Diameter           | 12 mm                        |
| Length             | 120 mm                       |
| pH-measuring range | 0...14                       |
| Temperature range  | 0...60 °C                    |



Model no. 1000413

FLAT

### FLOW

|                    |               |
|--------------------|---------------|
| Shaft Material     | Glass         |
| Connector          | S7 Head       |
| Electrolyte        | 3M KCl        |
| Diaphragm          | Teflon Sleeve |
| Diameter           | 12 mm         |
| Length             | 120 mm        |
| pH-measuring range | 0...14        |
| Temperature range  | -10...80 °C   |



Model no. 1000373

FLOW

More versions with fix cable or temperature probe on demand

## Electrodes for general laboratory application

### SEMI MICRO

|                    |              |
|--------------------|--------------|
| Shaft Material     | Glass        |
| Connector          | S7 Head      |
| Electrolyte        | 3M KCl       |
| Diaphragm          | Ceramic      |
| Diameter           | 12 mm / 6 mm |
| Length             | 100 mm       |
| pH-measuring range | 0...14       |
| Temperature range  | 0...100 °C   |



### MICRO

|                    |              |
|--------------------|--------------|
| Shaft Material     | Glass        |
| Connector          | S7 Head      |
| Electrolyte        | 3M KCl       |
| Diaphragm          | Ceramic      |
| Diameter           | 12 mm / 3 mm |
| Length             | 60 mm        |
| pH-measuring range | 0...14       |
| Temperature range  | 0...100 °C   |



### MICRO P

like MICRO,  
Electrolyte Glycerin KCL



## Food Measurements Electrodes

### FOOD

|                    |              |
|--------------------|--------------|
| Shaft Material     | Glass        |
| Connector          | S7 Head      |
| Electrolyte        | Glycerin KCL |
| Diaphragm          | 3 x Ceramic  |
| Diameter           | 12 mm        |
| Length             | 120 mm       |
| pH-measuring range | 0...14       |
| Temperature range  | -10...100 °C |



### 2 PORE

|                    |               |
|--------------------|---------------|
| Shaft Material     | Glass         |
| Connector          | S7 Head       |
| Electrolyte        | Polymer       |
| Diaphragm          | 2 x Open pore |
| Diameter           | 12 mm / 6 mm  |
| Length             | 35 mm         |
| pH-measuring range | 0...14        |
| Temperature range  | 0...+60 °C    |



### More versions 2 PORE

#### 2 PORE SLIM

like 2 PORE,  
Diameter 4.5 mm



## More versions 2 PORE

### 2 PORE F

like 2 PORE, Shaft Material POM / Glass



Model no. 1000293

2 PORE F

### 2 PORE T - Fix cable

like 2 PORE, T-probe NTC 30 kΩ



Model no. 1000323

2 PORE F - Fix cable

### 2 PORE STEEL T - Fix cable

like 2 PORE, T-probe NTC 30 kΩ

Shaft Glass/stainless steel, Length 50 mm



Model no. 1000313

2 PORE STEEL T - Fix cable

### 2 PORE K

|                    |                |
|--------------------|----------------|
| Shaft Material     | Glass / Steel  |
| Connector          | S7 Head        |
| Electrolyte        | Polymer        |
| Diaphragm          | 2 x Open pore  |
| Diameter           | 12 mm / 4.5 mm |
| Length             | 35 mm          |
| pH-measuring range | 0...14         |
| Temperature range  | 0...+60 °C     |



Model no. 1000303 - complete with knife

1000343 - without knife

1000353 - Replaceable knife

2 PORE K



### FOOD SLIM

|                    |              |
|--------------------|--------------|
| Shaft Material     | Glass        |
| Connector          | S7 Head      |
| Electrolyte        | Glycerin KCL |
| Diaphragm          | Ceramic      |
| Diameter           | 12 mm / 6 mm |
| Length             | 25 mm        |
| pH-measuring range | 0...14       |
| Temperature range  | 0...+100 °C  |



Model no. 1000243

FOOD SLIM

## Redox Electrodes

### STANDARD ORP

|                   |              |
|-------------------|--------------|
| Shaft Material    | Glass        |
| Connector         | S7 Head      |
| Electrolyte       | 3M KCl       |
| Diaphragm         | 3 x Ceramic  |
| Diameter          | 12 mm        |
| Length            | 120 mm       |
| Range             | +/- 2,000 mV |
| Temperature range | -10...100 °C |



Model no. 2000233

STANDARD ORP

### PLAST ORP

|                   |                      |
|-------------------|----------------------|
| Shaft Material    | Epoxy                |
| Connector         | S7 Head or fix cable |
| Electrolyte       | Gel                  |
| Diaphragm         | Ceramic              |
| Diameter          | 12 mm                |
| Length            | 120 mm               |
| Range             | +/- 1,000 mV         |
| Temperature range | 0...60 °C            |



Model no. 2000663 - with S7 Head

2000673 - with fix cable BNC

PLAST ORP

## Conductivity cells

### VP 8 – VPT 1

|                   |                    |
|-------------------|--------------------|
| Shaft / Plate     | Glass / Platin     |
| Cell constant     | 1 cm <sup>-1</sup> |
| Diameter          | 12 mm              |
| Length            | 120 mm             |
| Range             | 10 µS...10 mS      |
| Temperature range | 0...80 °C          |



Model no. 3004062 - VP 8, w/o T-probe  
3003352 - VPT 1, with T-probe

VP 8 - VPT 80/1

### VPT 01

|                   |                      |
|-------------------|----------------------|
| Shaft / Plate     | PVC / Steel          |
| Cell constant     | 0,1 cm <sup>-1</sup> |
| Diameter          | 12 mm                |
| Length            | 120 mm               |
| Range             | 0.1 µS...1 mS        |
| Temperature range | 0...60 °C            |



Model no. 3004012 - VPT 01, with T-probe

VPT 51/01

### VPT 10

|                   |                     |
|-------------------|---------------------|
| Shaft / Plate     | Glass / Platinum    |
| Cell constant     | 10 cm <sup>-1</sup> |
| Diameter          | 12 mm               |
| Length            | 120 mm              |
| Range             | 100 µS...200 mS     |
| Temperature range | 0...80 °C           |



Model no. 3004072 - VPT 10, with T-probe

VPT 80/10

### EPT1

|                   |                      |
|-------------------|----------------------|
| Schaft            | Epoxy                |
| Elektrodes        | 2 Graphit-Elektrodes |
| Cell constant     | 1 cm <sup>-1</sup>   |
| Diameter          | 12 mm                |
| Length            | 120 mm               |
| Range             | 10 µS...100 mS       |
| Temperature range | 0...60 °C            |



Model no. 3003382 – EPT1 with T-probe

EPT1

### EPT4

|                   |                      |
|-------------------|----------------------|
| Shaft Material    | PVC                  |
| Electrodes        | 4 Graphit-Electrodes |
| Cell constant     | 0.5 cm <sup>-1</sup> |
| Diameter          | 12 mm                |
| Length            | 120 mm               |
| Range             | 1 µS...200 mS        |
| Temperature range | 0...60 °C            |



Model no. 3003362 - EPT4 with T-probe,  
for EC-45 and EC-27 cond

EPT4

### 2301T

|                   |                    |
|-------------------|--------------------|
| Shaft / Plate     | Epoxy / Platinum   |
| Cell constant     | 1 cm <sup>-1</sup> |
| Diameter          | 12 mm              |
| Length            | 120 mm             |
| Range             | 10 µS...100 mS     |
| Temperature range | 0...60 °C          |



Model no. 3004002 - 2301T, with T-probe

2301T

|         |                   |                                                                                             |
|---------|-------------------|---------------------------------------------------------------------------------------------|
| 1000203 | Gel               | pH-electrode, gel-filled with ceramic diaphragma                                            |
| 1000223 | Polymer           | pH-electrode, polymer-filled with open pore diaphragma                                      |
| 1000443 | Polymer Tip       | pH-electrode, polymer-filled with double open pore diaphragma                               |
| 1000363 | Standard          | pH standard electrode with ceramic diaphragma                                               |
| 1000423 | Standard HA       | like standard, minimal Alkali error                                                         |
| 1000433 | Standard HF       | like standard, for samples with HF                                                          |
| 1000263 | STANDARD BNC      | like standard, with fix cable BNC                                                           |
| 1000273 | STANDARD DIN      | like standard, with fix cable DIN                                                           |
| 1000473 | STANDARD T - BNC  | like standard, with fix cable BNC and Temperature sensor                                    |
| 1000463 | STANDARD T DIN    | like standard, with fix cable DIN and Temperature sensor                                    |
| 1000493 | Polymer Plast     | Polymer electrode with 1 ceramic and 1 x open pore diaphragma, epoxy body                   |
| 1000503 | Polymer Plast BNC | like Polymer, with fix cable BNC                                                            |
| 1000513 | Polymer Plast DIN | like Polymer, with fix cable DIN                                                            |
| 1002002 | 201T              | pH-electrode with epoxy body, temperature sensor and fix cable BNC                          |
| 1002042 | 201 T DIN         | pH-electrode with Temperature sensor and fix DIN-cable                                      |
| 1000413 | Flat              | pH-electrode for surface measurements, 3-hole diaphragma with Teflon                        |
| 1000373 | Flow              | pH-electrode for viscous samples and low ion media, Teflon sleeve diaphragma                |
| 1000383 | Semi-Micro        | pH-electrode for test tube measurements                                                     |
| 1000213 | Micro             | pH-electrode for small volume samples                                                       |
| 1000253 | Micro P           | pH-electrode for small volume samples with protein, Electrolyte Glycerin                    |
| 1005223 | GEL Plast BNC     | pH-electrode with epoxy body, fix BNC-cable and double diaphragma                           |
| 1000393 | FOOD              | pH-electrode with Glycerin KCl electrolyte and 3 ceramic diaphragm                          |
| 1000333 | 2 PORE            | pH-electrode with 2 open pore diaphragma                                                    |
| 1000393 | FOOD              | pH-electrode with Glycerin KCl electrolyte and 3 ceramic diaphragm, S7- Head                |
| 1000753 | FOOD T-BNC        | pH-electrode with Glycerin KCl electrolyte, 3 ceramic diaphragm, T-sensor and fix BNC-cable |
| 1000333 | 2 PORE            | pH-electrode with 2 open pore diaphragma, S7-Head                                           |
| 1000283 | 2 PORE SLIM       | like 2 PORE, with small surface Ø 4,5mm, S7-Head                                            |
| 1000293 | 2 PORE F          | like 2 PORE, shaft POM/Glass, S7-Head                                                       |
| 1000703 | 2 PORE F T-BNC    | pH-electrode with double hole diaphragma, Ø 6 mm, T-sensor and fix BNC-cable                |
| 1000323 | 2 Pore T          | like 2 PORE, with temperature sensor 30 KΩ, fix cable BNC                                   |
| 1000313 | 2 Pore Steel T    | like 2 PORE, shaft Steel/Glass, with temperature sensor and fix cable BNC                   |
| 1000303 | 2 PORE K complete | like 2 PORE T, with knife, S7-Head                                                          |
| 1000343 | 2 PORE K          | like 2 PORE K without knife                                                                 |
| 1000353 | Knife             | Replacement knife for 2 PORE K                                                              |
| 1000243 | Food Slim         | pH-electrode with Glycerin KCl electrolyte and 2 ceramic diaphragm, S7-Head                 |

## DHS pH - Standard Electrodes

|         |                      |                                                                                                    |
|---------|----------------------|----------------------------------------------------------------------------------------------------|
| 1100103 | 201T DHS             | pH-electrode with epoxy body, temperature sensor and fix cable BNC, DHS-function                   |
| 1100123 | STANDARD T - BNC DHS | pH standard electrode with ceramic diaphragma, fix BNC-cable and Temperature sensor, DHS-function  |
| 1100113 | 2 Pore T DHS         | pH-electrode with 2 open pore diaphragma, Temperature sensor and fix BNC-cable, DHS-function       |
| 1100133 | Flow T BNC DHS       | pH electrode for low-ion media and viscous samples, with fixed BNC cable and T-probe, DHS function |
| 1100143 | 2 PORE F T-BNC DHS   | pH electrode with double hole diaphragm, Ø 6 mm, shaft POM/glass and T-probe, DHS function         |

## Electrodes for ORP Measurement

|         |               |                                                          |
|---------|---------------|----------------------------------------------------------|
| 2000233 | Standard ORP  | electrode with platinum ring for ORP/Redox               |
| 2000663 | Plast ORP     | electrode with platinum pin for ORP/Redox                |
| 2000673 | Plast ORP/BNC | electrode with platinum pin for ORP/Redox, fix cable BNC |

## Conductivity Cells

|         |           |                                                                                                                                              |
|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 3004062 | VP8       | conductivity cell, cell constant c=1, fix cable BNC                                                                                          |
| 3003352 | VPT 80/1  | conductivity cell, cell constant c=1, fix cable BNC, temperature sensor                                                                      |
| 3004012 | VPT51/01  | conductivity cell, cell constant c=0,1, fix cable BNC, temperature sensor for ultrapure water                                                |
| 3004072 | VPT 80/10 | conductivity cell, cell constant c=10, fix cable BNC, temperature sensor for sea water                                                       |
| 3004002 | 2301T     | conductivity cell, cell constant c=1, fix cable BNC, temperature sensor                                                                      |
| 3003382 | EPT 1     | Cond. Cell, cell constant c=1, meas. range 10 µS...100 mS, fix cable BNC, T-sensor                                                           |
| 3004002 | EPT 4     | conductivity cell, cell constant c=0,55, fix Multi-Pin cable, T-Sensor<br>4-pole conductivity cell, 0.1 µS...1 S, <i>Only for EC-45-cond</i> |

## Conductivity Standards

|        |                                                                                      |
|--------|--------------------------------------------------------------------------------------|
| 800613 | Conductivity Standard 84 µS/cm ± 1% / 25 °C, 500 ml bottle                           |
| 800633 | Conductivity Standard 1.413 µS/cm ± 1% / 25 °C, 500 ml bottle                        |
| 800643 | Conductivity Standard 12.880 µS/cm ± 1% / 25 °C, 500 ml bottle                       |
| 850513 | Conductivity Standard 5 µS/cm ± 0.1 / 25 °C, 300 ml bottle with N.I.S.T. certificate |
| 850313 | Conductivity Standard 5 µS/cm ± 0.1 / 25 °C, 300 ml bottle with DFM certificate      |
| 850303 | Conductivity Standard 1.3 µS/cm ± 0.1 / 25 °C, 300 ml bottle with DFM certificate    |



Conductivity Standards

## pH Buffer Solutions

|        |                                                        |
|--------|--------------------------------------------------------|
| 800033 | Buffer pH4, $\pm 0.01$ / 25 °C, 250 ml bottle, red     |
| 800133 | Buffer pH4, $\pm 0.01$ / 25 °C, 500 ml bottle, red     |
| 800233 | Buffer pH4, $\pm 0.01$ / 25 °C, 5 Liter red            |
| 800043 | Buffer pH7, $\pm 0.01$ / 25 °C, 250 ml bottle, green   |
| 800143 | Buffer pH7, $\pm 0.01$ / 25 °C, 500 ml bottle, green   |
| 800243 | Buffer pH7, $\pm 0.01$ / 25 °C, 5 Liter green          |
| 800073 | Buffer pH9.21, $\pm 0.02$ / 25 °C, 250 ml bottle, blue |
| 800173 | Buffer pH9.21, $\pm 0.02$ / 25 °C, 500 ml bottle, blue |
| 800273 | Buffer pH9.21, $\pm 0.02$ / 25 °C, 5 Liter blue        |
| 800063 | Buffer pH10 $\pm 0.02$ / 25 °C, 250 ml bottle, clear   |
| 800163 | Buffer pH10 $\pm 0.02$ / 25 °C, 500 ml bottle, clear   |
| 800263 | Buffer pH10, $\pm 0.02$ / 25 °C, 5 Liter clear         |



pH-Buffer Solutions

## pH Storage Solution

|         |                         |
|---------|-------------------------|
| 1008013 | 3M KCl-Solution, 500 ml |
|---------|-------------------------|

## Redox Buffer

|        |                                            |
|--------|--------------------------------------------|
| 800303 | 250 ml Redox/ORP 200 mV $\pm 5$ mV / 25 °C |
| 800313 | 250 ml Redox/ORP 475 mV $\pm 5$ mV / 25 °C |
| 800323 | 500 ml Redox/ORP 475 mV $\pm 5$ mV / 25 °C |

DAKKS certified  
buffer solutions  
are available as well



Printer 1001502

## More Accessories

|         |                             |
|---------|-----------------------------|
| 1001733 | Cable S7 / BNC 1 Meter      |
| 1001743 | Cable S7 / DIN 1 Meter      |
| 1002012 | Temperature sensor NT55     |
| 1000112 | Elektrode holder            |
| 1001502 | Printer for EC-36 and EC-45 |

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