

# PRO 51x

## PORTABLE pH METER / DATA LOGGER WITH BNC CONNECTION



[www.senseca.com](http://www.senseca.com)

### INTRODUCTION

The **PRO 511** and **PRO 515** are **top-of-the-range professional pH meters** offering a wide range of features, high-grade robustness and user-friendly operation for safe and reliable use in **water analysis applications**.

The **PRO 515** has **data logging capabilities** and a long-life battery. Its water, drop and impact protection make it a perfect choice for field use, and its integrated pop-up stand makes it ideal for laboratory use.

The specialized BNC + temperature input allows the use of cost-effective electrochemical sensors, such as pH electrodes, which provide IP water protection. The analogue input is practical and economical. The banana-plug temperature input allows operation with pH & T combi-electrodes or pH electrodes plus separate temperature sensors, such as the GF1T-T3-B-BS.

Calibration is comfortably automated – the user interface will guide you safely through the process.

The multilingual graphical display with a live chart feature sets this instrument apart from traditional pH meters on the market.

### FEATURES

#### Display

The multilingual large dot matrix/clear text LCD has ergonomic wide-angle visibility from daylight to darkness, thanks to the backlight.

It displays either large scale values, statistical data or the live chart of measurement history.

The HOLD feature allows freezing the measurements on display.

Many units of measurement are available, depending on the connected probes.

#### Data Logging (PRO 515)

Large storage capacity: up to 1 million data sets, file system based.

The logged data are stored in CVS files that can be easily viewed connecting the instrument to a PC via USB: the instrument is seen by the PC as a mass storage device, the data can be read out and evaluated without software necessarily needed. Automatic log with configurable interval. The comfortable data management software **ProXware** is **downloadable at [senseca.com](http://senseca.com) - for free**. Alternatively the logger can be used as a manual data collector: Datasets are recorded on demand into .json-file.

The instruments integrate a real time clock: date and time of each logged sample are stored.



### HIGHLIGHTS

- Water protected IP67 (with suitable pH electrode GE 114 or GE 135)
- BNC connection and temperature input Pt1000/NTC for interchangeable electrodes e.g. pH and ORP
- Life chart display
- Easy to use due to backlit dot matrix/clear text display and multilingual
- Data logger with files read out via USB - no extra software necessary (only PRO 515)
- Built-in foldable stand and magnet for flexible operation
- Integrated magnet at backside

## Alarm

Configurable alarm thresholds and optionally hysteresis can be set. LCD indication and buzzer activation when thresholds are exceeded.

## Power supply

4 powerful rechargeable AA NiMH batteries, the low power design and the configurable auto-off feature ensure long operation. For permanent operation the instrument can also be powered via its USB C port. Any standard 5 Vdc power adapter with min 800 mA or PC USB port can be used. Configurable LCD backlight for more energy saving options.

## Connection to PC

Via the USB C port, for viewing or downloading the files stored in the instruments internal memory or connecting to the application software ProXware.



# CONFIGURATION & MEASUREMENT

## Probes BNC-Input

The high impedance voltage input allows connection of pH or ORP electrodes, which specially makes sense in harsh applications where electrodes are replaced often. The temperature input for compensation and comfortable adjustment/calibration support makes measuring reliable and comfortable and can be used with pH electrodes with integrated temperature sensor (1 banana plug).

## Temperature input

With the help of banana sockets, separate temperature sensors can be connected or pH combination electrodes with integrated temperature sensors can be used.

## Adjustment with buffer solutions

Comfortable adjustment ("calibration") can be accomplished with guided user interface, reliable and precise due to fully temperature compensated. In combination with our GPH buffer solutions, this is an excellent economic and practicable solution.

## Calibration support

Calibration reports or DAkkS/ACCREDIA certificates are available upon request. The last calibration date is stored.

## Statistics

Detection of MIN, AVG (average) and MAX. The user can clear the statistical info to start a new statistical calculation.



**BNC and 2 x Banana sockets  
for temperatur**

Measurement specifications

|                             |                                                    |
|-----------------------------|----------------------------------------------------|
| Measuring range             |                                                    |
| pH                          | -2...+16 pH                                        |
| ORP                         | -2000...+2000 mV                                   |
| Temperature                 | -5...+150 °C (Pt1000) / -5...+105 °C (NTC 10k/30k) |
| Resolution                  |                                                    |
| pH                          | 0.001 pH                                           |
| ORP                         | 0.1 mV                                             |
| Temperature Pt1000          | 0.1 °C / 0.1 °F                                    |
| Accuracy (@ 25°C ±1 digit)  |                                                    |
| pH                          | ±0.01 pH                                           |
| ORP                         | ±1 mV                                              |
| Temperature Pt1000          | ±0.2 °C (depending on connected sensor)            |
| Temperature compensation pH | Manual, automatic                                  |
| Measurement rate            | 1 meas/s                                           |

General specifications

|                          |                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input channels           | 1 BNC connector for pH/ORP electrodes<br>2 x 4 mm banana connectors for temperature sensor and/or reference electrode                                                                                                                                              |
| DATA LOGGER ONLY PRO 515 |                                                                                                                                                                                                                                                                    |
| Storage capacity         | Up to 1 million data sets, file system based. Each data set includes date/time stamp and measurements of all channels. Data are stored in CSV files                                                                                                                |
| Logging type             | Automatic with manual start/stop or manual single recording                                                                                                                                                                                                        |
| Logging interval         | 1, 5, 10, 15, 30 s / 1, 2, 5, 10, 15, 20, 30 min / 1 hour                                                                                                                                                                                                          |
| Clock                    | User settable RTC<br>Max. drift 1 min/month @ 25 °C                                                                                                                                                                                                                |
| Display                  | 140 x 160 dot matrix backlit LCD / visible area 42 x 50 mm<br>Multiple choice of measurement screens: <ul style="list-style-type: none"><li>• Large digit single value</li><li>• Multi-row</li><li>• Statistical info (Min/Avg/Max)</li><li>• Chart view</li></ul> |
| User interface           | Multilingual (de, en, it, fr, es)                                                                                                                                                                                                                                  |
| PC connection            | USB C<br>Mass Storage Device                                                                                                                                                                                                                                       |
| Power supply             | 4 x AA NiMH batteries<br>External 5 Vdc via USB C (power adapter or PC USB port)                                                                                                                                                                                   |
| Power consumption        | 12 mA typ.                                                                                                                                                                                                                                                         |
| Battery autonomy         | > 200 h typ. continuous operation (backlight off)                                                                                                                                                                                                                  |
| Auto power off           | user configurable<br>Automatically disabled if external power is connected                                                                                                                                                                                         |
| Operating conditions     | -5...50 °C<br>0...85 %RH non-condensing                                                                                                                                                                                                                            |
| Storage temperature      | -25...65 °C (without batteries)                                                                                                                                                                                                                                    |
| Protection degree        | IP 67 IK 04                                                                                                                                                                                                                                                        |
| Dimensions               | 170 x 80 x 38 mm                                                                                                                                                                                                                                                   |
| Weight                   | 345 g approx.                                                                                                                                                                                                                                                      |
| Housing material         | ABS, TPE (side protection)<br>Polyester (front panel)                                                                                                                                                                                                              |

pH and ORP electrodes

|                                                                                     |                           |
|-------------------------------------------------------------------------------------|---------------------------|
| Without integrated temperature sensor                                               |                           |
| GE 114-WD... - Low-maintenance gel electrode                                        |                           |
|  |                           |
| Measuring range:                                                                    | 0.0...14.00 pH            |
| Operational range:                                                                  | 0...60 °C                 |
| Conductivity:                                                                       | >200 µS/ cm               |
| Waterproof:                                                                         | IP 65/67                  |
| Electrolyte:                                                                        | Gel electrolyte           |
| Diaphragm:                                                                          | 1 x Pellon                |
| GE 100-BNC... - Universal electrode, replacement pH electrode                       |                           |
| Measuring range:                                                                    | 0.0...14.00 pH            |
| Operational range:                                                                  | 0...80 °C                 |
| Conductivity:                                                                       | >100 µS/ cm               |
| Waterproof:                                                                         | only shaft                |
| Electrolyte:                                                                        | KLC, refillable           |
| Diaphragm:                                                                          | 2 x ceramic               |
| Integrated temperature sensor                                                       |                           |
| GE 135-WD... - Universal combination pH electrode incl. Pt1000                      |                           |
| Measuring range:                                                                    | 0.0...14.00 pH, 0...80 °C |
| Conductivity:                                                                       | >150 µS/ cm               |
| Waterproof:                                                                         | IP 67                     |
| Pressure resistant                                                                  | 5 bar                     |
| Electrolyte:                                                                        | Gel electrolyte           |
| Diaphragm:                                                                          | 1 x ceramic               |
| Pressure resistant pH electrode with Pt1000                                         |                           |
| GE 117-BNC... - pH-electrode incl. Pt1000, pressure resistant                       |                           |
| Measuring range:                                                                    | 0.0...14.00 pH, 0...80 °C |
| Operational range:                                                                  | 0...80 °C                 |
| Conductivity:                                                                       | >100 µS/ cm               |
| Waterproof:                                                                         | only shaft                |
| Pressure, Thread                                                                    | 6 bar, PG 13.5            |
| Electrolyte:                                                                        | Gel                       |
| Diaphragm:                                                                          | 2 x ceramic               |
| ORP / Redox electrode                                                               |                           |
| GR 105... - ORP-Electrode                                                           |                           |
| Measuring range:                                                                    | ±2000 mV                  |
| Operational range:                                                                  | 0...80 °C                 |
| Conductivity:                                                                       | >100 µS/ cm               |
| Waterproof:                                                                         | only shaft                |
| Electrolyte:                                                                        | KCL, refillable           |
| Electrode:                                                                          | Platinum                  |

## Ordering codes

|                                                   |                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRO 511</b><br><i>Art.No. 488814</i>           | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, incl batteries, Quickstart, device in carton box, test-protocol, without electrode.                                                                                                                       |
| <b>PRO 515</b><br><i>Art.No. 488815</i>           | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, with data logger, incl batteries, Quickstart, USB-C cable, device in carton box, test-protocol, without electrode. Software ProXware downloadable from Senseca website                                    |
| Probes must be ordered separately.                |                                                                                                                                                                                                                                                                                  |
| <b>Ready-to-use available sets</b>                |                                                                                                                                                                                                                                                                                  |
| <b>PRO 511-G135L02</b><br><i>Art.No. 489592</i>   | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, incl batteries, Quickstart, device in carton box, test-protocol, pH electrode GE 135-L02 (PT1000)                                                                                                         |
| <b>PRO 511-SET_135</b><br><i>Art.No. 489593</i>   | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, incl batteries, Quickstart, device in Case PRO-400, test protocol, pH electrode pH GE135, 2 m, KCL3M, 3 x 2 GPH-BAG                                                                                       |
| <b>PRO 515-G135L02</b><br><i>Art.No. 489594</i>   | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, with data logger, incl batteries, Quickstart, USB-C cable, device in carton box, test-protocol, pH electrode GE 135-L02 (PT1000).<br>Software ProXware downloadable from Senseca website                  |
| <b>PRO 515-SET_135</b><br><i>Art.No. 489595</i>   | Waterproof pH-/ORP-/temperature measuring instrument, graphic display, with data logger, incl batteries, Quickstart, USB-C cable, device in Case PRO-400, test protocol, pH electrode pH GE135 2 m, KCL3M, 3 x 2 GPH-BAG<br>Software ProXware downloadable from Senseca website. |
| <b>pH and ORP electrodes</b>                      |                                                                                                                                                                                                                                                                                  |
| <b>Without integrated temperature sensor</b>      |                                                                                                                                                                                                                                                                                  |
| <b>GE 114-BNC-WD-L01</b><br><i>Art.No. 610460</i> | Low-maintenance gel electrode GE 114 WD (waterproof BNC connection), 1 m cable                                                                                                                                                                                                   |
| <b>GE 100-BNC-L01</b><br><i>Art.No. 600704</i>    | Universal electrode, replacement pH electrode, 1 m cable                                                                                                                                                                                                                         |
| <b>Integrated temperature sensor</b>              |                                                                                                                                                                                                                                                                                  |
| <b>GE 135-WD-L01</b><br><i>Art.No. 483292</i>     | Universal combination pH electrode incl. Pt1000, replacement pH electrode, 1 m cable                                                                                                                                                                                             |
| <b>GE 135-WD-L02</b><br><i>Art.No. 483293</i>     | Universal combination pH electrode incl. Pt1000, replacement pH electrode, 2 m cable                                                                                                                                                                                             |
| <b>GE 117-BNC-L02</b><br><i>Art.No. 600730</i>    | Pressure resistant pH electrode with Pt1000, 2 m cable                                                                                                                                                                                                                           |
| <b>GR 105-BNC-L01</b><br><i>Art.No. 607798</i>    | ORP electrode, 1 m cable                                                                                                                                                                                                                                                         |
| <b>Other cable lengths on request</b>             |                                                                                                                                                                                                                                                                                  |

## Consumables

|                                               |                                                                                                                                                                                                      |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GPH-DOS-4</b><br><i>Art.No. 485556</i>     | Ready-to-use buffer solution (pH 4.01 / 25 °C), 250 ml dosing bottle                                                                                                                                 |
| <b>GPH-DOS-7</b><br><i>Art.No. 485554</i>     | Ready-to-use buffer solution (pH 7.00 / 25 °C), 250 ml dosing bottle                                                                                                                                 |
| <b>GPH-DOS-10</b><br><i>Art.No. 485557</i>    | Ready-to-use buffer solution (pH 10.01 / 25 °C), 250 ml dosing bottle                                                                                                                                |
| <b>GPH-BAG-4-20</b><br><i>Art.No. 488912</i>  | Ready-to-use buffer solution (pH 4.01), sachet 25 ml, 20 pcs                                                                                                                                         |
| <b>GPH-BAG-7-20</b><br><i>Art.No. 488913</i>  | Ready-to-use buffer solution (pH 7.00), sachet 25 ml, 20 pcs                                                                                                                                         |
| <b>GPH-BAG-10-20</b><br><i>Art.No. 488914</i> | Ready-to-use buffer solution (pH 10.01), sachet 25 ml, 20 pcs                                                                                                                                        |
| <b>GAK 1400</b><br><i>Art.No. 603523</i>      | Working- and calibration set consisting of: 5 x buffer capsules GPH 4.0, GPH 7.0 and GPH 10.0, 3 x 100 ml plastic bottle GPF 100, 1 x 3 mol KCL electrolyte, KCL3M and 1 x cleaning solution GRL 100 |
| <b>GRL100</b><br><i>Art.No. 601422</i>        | 100 ml pepsin/HCl cleaning solution                                                                                                                                                                  |
| <b>KCL 3M</b><br><i>Art.No. 602477</i>        | KCL Solution: Storage solution / Electrode refill                                                                                                                                                    |
| <b>GSKA 3610</b><br><i>Art.No. 607267</i>     | Protection hat for depth measuring for sensors Ø 12 mm, gunmetal                                                                                                                                     |

## Other accessories

|                                              |                                                                                                                                             |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CASE PRO-400</b><br><i>Art.No. 486900</i> | Case for PRO Line.<br>Recess for one instrument, space for accessories, carrying handle, zipper.<br>Dimensions: 415 x 245 x 70 mm (W xHxD). |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|

