# Multi-parameter portable meters with GLP functions handylab pH/LF 12 and handylab multi 12

The multi-parameter pocket-size meters – handylab pH/LF 12 and handylab multi 12 – in shock-proof, water-tight casings are ideally suited for field work.

**Measurement parameters**

The measurement parameters pH, redox potential, temperature and conductivity means that the handylab pH/LF 12 has a variety of uses. The handylab multi 12 can also be used to measure the oxygen concentration in solutions.

**Measurement memory and interface**

The meters have a data memory, which means that measurements can be saved manually or automatically by using a timer control, and evaluated later on. Both meters have a serial RS-232 interface (bi-directional) for data transfer purposes.

**Measurement reliability**

The special AutoRead function, which can be additionally activated, serves to monitor the drift of the combination electrode. The measured value is only released when the stability criteria are fulfilled. This ensures the reproducibility of measurement results.

**Calibration**

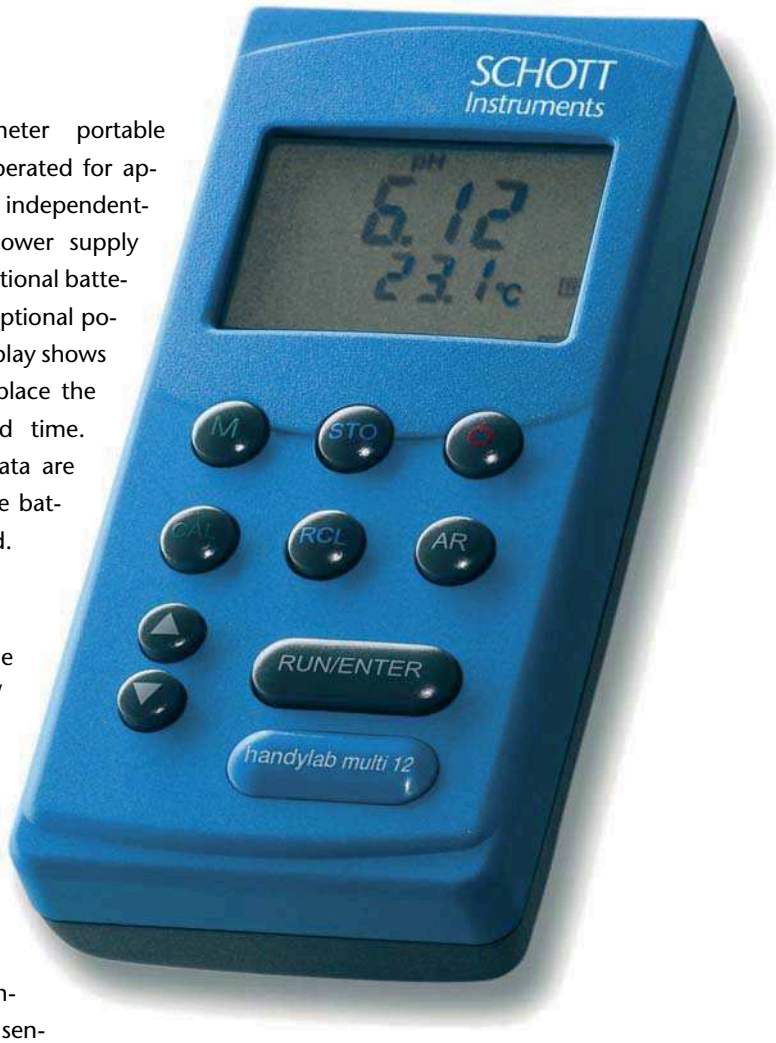
For calibration of the pH measurement, there is a one or two point calibration with technical buffers. For calibration of the conductivity sensor and the oxygen sensor, if needed, there is an automatic calibration function. After automatic calibration, a sensor symbol indicates the status of the calibrated sensor. The adjustable calibration timer can remind the user that calibration is due to be performed.

**Power supply**

The multi-parameter portable meters can be operated for approx. 2,500 hours independently of a mains power supply using four conventional batteries, or with the optional power pack. The display shows a reminder to replace the batteries in good time. The calibration data are retained when the batteries are changed.

**Sensors**

We supply the handylab pH/LF12 complete with a suitable pH combination electrode and conductivity sensor. The handylab multi 12 additionally includes an oxygen sensor.




**As a set**

The handylab pH/LF 12 and handylab multi 12 multi-parameter meters are available as a complete set in a carrying case with all of the requisite sensors, calibration and maintenance accessories. With the set, you can get to work immediately.

# Technical data
# handylab pH/LF 12, handylab multi 12

| Parameters | | handylab pH/LF 12 | handylab multi 12 |
|---|---|---|---|
| **Measuring ranges** | | | |
| pH/mV | pH range/resolution | -2.00…+19.99 pH | -2.00…+19.99 pH |
| | accuracy (±1 digit) | ±0.01 pH | ±0.01 pH |
| | mV range/resolution | -1999…+1999 mV | -1999…+1999 mV |
| | accuracy (±1 digit) | ±1 mV | ±1 mV |
| temperature | measuring range | -5.0…+105.0 °C | -5.0…+105.0 °C |
| | manual setting | -20…+130 °C | -20…+130 °C |
| oxygen | concentration: ranges/resolution | - | 0.00…19.99 mg/l/0…90.0 mg/l |
| | saturation: ranges/resolution | - | 0.00…199.9 %/0.0…600 % |
| | accuracy (±1 digit) | - | ±0.5 % of measured value |
| | temp. compensation, automatically | - | 0.0…50.0 °C |
| conductivity | 4 ranges/Auto range | 1 µS/cm…500 mS/cm | 1 µS/cm…500 mS/cm |
| | salinity acc. to IOT table | 0.0…70.0 | 0.0…70.0 |
| | accuracy (±1 digit) | ±0.5 % of measured value | ±0.5 % of measured value |
| | temperature compensation modes | linear, nonlinear, no compensation | nonlinear |
| | cell constant, calibrate | 0.450…0.500 | 0.450…0.500 |
| drift control | deactivatable | yes | yes |
| sensor evaluation | by symbol on display | yes | yes |
| **Calibration** | | | |
| pH | technical (2.00/4.00/7.00/10.01)*) | 1-/2-point | 1-/2-point |
| | DIN (1.68/4.01/6.87/9.18) | 1-/2-point | - |
| oxygen | automatic calibration | - | yes |
| conductivity | automatic calibration | yes | yes |
| calibration interval control | | 1…999 days | 1…999 days |
| calibration data store | | yes | yes |
| real time clock | integrated with time/date | yes | yes |
| **Serial interface** | | | |
| type | | RS 232, bi-directional | RS 232, bi-directional |
| baud rate | | adjustable | adjustable |
| **Data storage** | | | |
| storage by depression of key | | 500 data records | 500 data records |
| time controlled storage | in 7 levels (5 sec...60 min) | 500 data records | 500 data records |
| **Input** | | | |
| pH/redox-electrode (opt. with temperature sensor) | | socket acc. to DIN 19262 + | socket acc. to DIN 19262 + |
| | | socket 4 mm | socket 4 mm |
| conductivity/oxygen sensor | | 8 pole socket | 8 pole socket |
| **Output** | | | |
| for RS-232 cable Z 395, bi-directional | | 4 pole socket | 4 pole socket |
| for recorder cable Z 394 | | 4 pole socket | 4 pole socket |
| **Ambient temperature** | | | |
| operating temperature | | -10…+55 °C | -10…+55 °C |
| relative humidity (annual average) | | < 90 % | < 90 % |
| **Power supply** | | | |
| battery operated | | 4 x 1.5 V mignon cells (type AA) | 4 x 1.5 V mignon cells (type AA) |
| battery life time (data remain when changing batteries) | | approx. 2,500 h | approx. 2,500 h |
| automatic switch off at battery operation | | 60 min | 60 min |
| power supply (no akku) | | optionally | optionally |
| **Housing** | | ABS, water-tight key pad | ABS, water-tight key pad |
| dimensions (H x W x D) | | 172 mm x 80 mm x 37 mm | 172 mm x 80 mm x 37 mm |
| weight | | approx. 0.3 kg | approx. 0.3 kg |
| **Display** | | | |
| LCD multi-function display | | 60 mm x 45 mm | 60 mm x 45 mm |
| **Instrument safety** | protection class | 3, EN 61010-1 | 3, EN 61010-1 |
| | protection type | IP 66, EN 60529 | IP 66, EN 60529 |
| approvals/marks of conformity | | cETLus, CE | cETLus, CE |
| instrument warranty | | 3 years | 3 years |

*) SCHOTT Instruments

# Order overview handylab pH meters, conductivity meters and oxygen meters

| pH meters | Type no. | Order no. |
|---|---|---|
| handylab pH 11, individual meter | handylab pH 11 | 28 520 2871 |
| handylab pH11, individual meter with carrying case | handylab pH 11/K | 28 520 2863 |
| handylab pH 11, case set, complete, ready to use with pH combination electrode BlueLine 23 pH, calibration solutions and plastic beakers | handylab pH 11/23 pH | 28 520 2917 |
| handylab pH 11, case set, complete, ready to use with pH combination electrode BlueLine 24 pH, calibration solutions and plastic beakers | handylab pH 11/24 pH | 28 520 2982 |
| handylab pH 11, case set, complete, ready to use with pH combination electrode BlueLine 14 pH, calibration solutions and plastic beakers | handylab pH 11/14 pH | 28 520 2999 |
| handylab pH 12, individual meter | handylab pH 12 | 28 520 2896 |
| handylab pH12, individual meter with carrying case | handylab pH 12/K | 28 520 2888 |
| handylab pH 12, case set, complete, ready to use with pH combination electrode BlueLine 24 pH, calibration solutions and plastic beakers | handylab pH 12/24 pH | 28 520 3054 |
| handylab pH 12, case set, complete, ready to use with pH combination electrode BlueLine 14 pH, calibration solutions and plastic beakers | handylab pH 12/l4 pH | 28 520 3062 |
| **Conductivity meters** | | |
| handylab LF 11, individual meter | handylab LF 11 | 28 520 3292 |
| handylab LF11, individual meter with carrying case | handylab LF 11/K | 28 520 3276 |
| handylab LF11, case set, complete, ready to use with 4-pole conductivity cell LF 413T, calibration solutions and plastic beaker | handylab LF 11/413 T | 28 520 3310 |
| handylab LF 11, case set, complete, ready to use with 2-pole conductivity cell LF 513 T, calibration solutions and plastic beaker | handylab LF 11/513 T | 28 520 3321 |
| handylab LF 11, case set, complete, ready to use with 4-pole conductivity cell LF 613 T, calibration solutions and plastic beaker | handylab LF 11/613 T | 28 520 3346 |
| handylab LF 12, individual meter | handylab LF 12 | 28 520 3362 |
| handylab LF12, individual meter with carrying case | handylab LF 12/K | 28 520 3354 |
| handylab LF12, case set, complete, ready to use with 4-pole conductivity cell LF 413T, calibration solutions and plastic beaker | handylab LF 12/413 T | 28 520 3330 |
| handylab LF 12, case set, complete, ready to use with 4-pole conductivity cell LF 613 T, calibration solutions and plastic beaker | handylab LF 12/613 T | 28 520 3379 |
| **Oxygen meter** | | |
| handylab OX12, individual meter with carrying case | handylab LF 12/K | 106 3835 |
| handylab OX 12, case set, complete, ready to use with oxygen sensor 9009/61, calibration and maintenance accessories | handylab OX12-Set | 28 520 2793 |

# Order overview handylab multi-parameter portable meters

| Multi-Parameter meters | Type no. | Order no. |
|---|---|---|
| handylab pH/LF 12, individual meter | handylab pH/LF 12 | 28 520 3465 |
| handylab pH/LF 12, case set,<br>complete, ready to use with pH combination electrode BlueLine 24-3 pH,<br>4-pole conductivity cell LF 413-3 T, calibration and maintenance accessories | handylab pH/LF 12-Set | 28 520 3473 |
| handylab multi 12, individual meter | handylab multi 12 | 28 520 3502 |
| handylab multi 12, case set,<br>complete, ready to use with pH combination electrode BlueLine 24-3 pH,<br>4-pole conductivity cell LF 413-3 T, oxygen sensor 9009/63,<br>calibration and maintenance accessories | handylab multi 12-Set | 28 520 3519 |
| **Accessories** | | |
| Redox combination electrode with plug head | BlueLine 31 Rx | 28 512 9311 |
| Plug cable combination<br>e.g. for BlueLine 31 Rx, 1 m cable, DIN plug | LB 1 A | 28 512 2653 |
| Electrolyte solution KCl 3 mol/l,<br>1000 ml DURAN® bottle | L 300 | 28 513 8554 |
| Technical buffer solutions pH 4.00 / 7.00, 2 x 30 ampoules | L 4690 | 28 513 8398 |
| Redox test solution 180, 430, 600 mV Pt/calomel;<br>220, 470, 640 mV Pt/Ag/AgCl, 3 x 20 ampoule | L 4648 | 28 513 8784 |
| Conductivity test solutions KCl 0.01 / 0.1 / 1 mol/l<br>(1.41 mS/cm / 12.9 mS/cm / 112 mS/cm), 3 x 6 ampoules | LF 995 | 28 512 6293 |
| Field armouring with holder carrying handle and shoulder strap,<br>for handylab pH meters | Z 384 | 28 520 4848 |
| Protective armouring with holder and carrying handle,<br>for handylab pH meters | Z 385 | 28 520 4856 |
| Holder set for protective armouring,<br>for handylab OX12 meters | Z 386 | 28 520 4864 |
| Rubberized elastic protective armouring with handle support,<br>for all handylab meters | Z 387 | 28 520 4872 |
| Universal mains power supply unit, 100...240 V<br>for all handylab 12 models | Z 850 | 28 520 4889 |
| Connecting cable for analogue recorder,<br>for handylab pH 12, LF 12, OX12 | Z 394 | 28 520 4942 |
| Connecting cable for PC,<br>for all handylab 12 models (software included) | Z 395 | 28 520 4959 |

*Subject to technical changes.*
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