

# 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

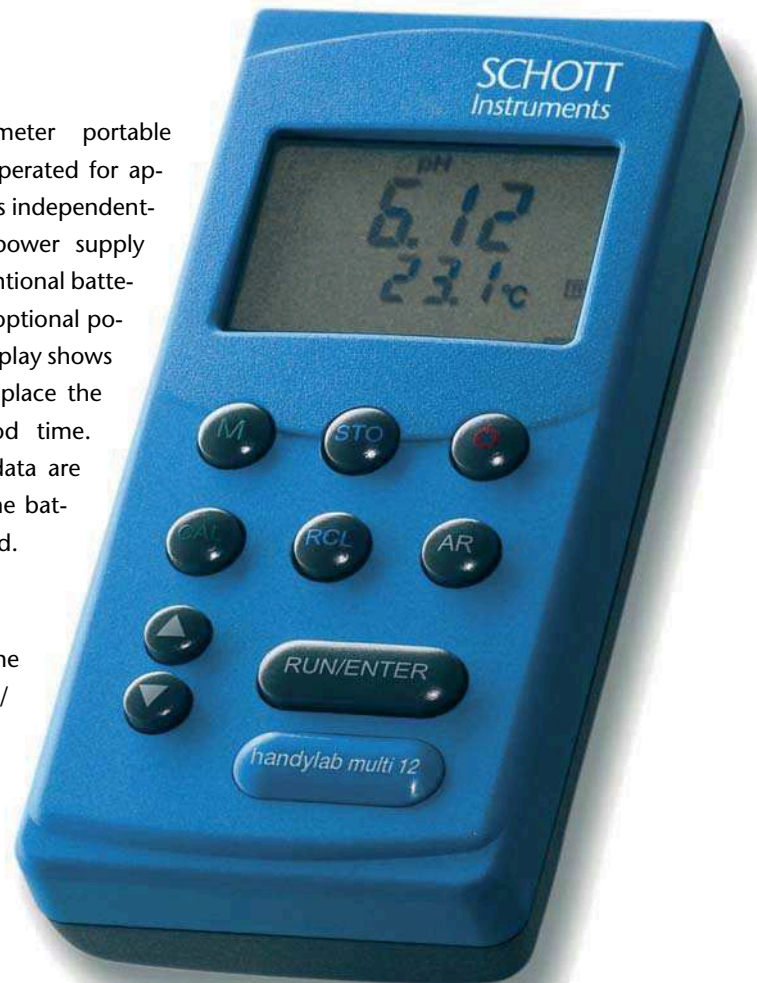
The multi-parameter portable meters can be operated for approx. 2,500 hours independently of a mains power supply using four conventional batteries, or with the optional power pack. The display shows a reminder to replace the batteries in good time. The calibration data are retained when the batteries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



handylab

# Technical data

## handylab pH/LF 12, handylab multi 12

Parameters		handylab pH/LF 12	handylab multi 12
<b>Measuring ranges</b>			
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
<b>Calibration</b>			
pH	technical (2.00/4.00/7.00/10.01) <sup>*)</sup>	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
<b>Serial interface</b>			
type		RS 232, bi-directional	RS 232, bi-directional
baud rate		adjustable	adjustable
<b>Data storage</b>			
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
<b>Input</b>			
pH/redox-electrode (opt. with temperature sensor)		socket acc. to DIN 19262 + socket 4 mm	socket acc. to DIN 19262 + socket 4 mm
conductivity/oxygen sensor		8 pole socket	8 pole socket
<b>Output</b>			
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
<b>Ambient temperature</b>			
operating temperature		-10...+55 °C	-10...+55 °C
relative humidity (annual average)		< 90 %	< 90 %
<b>Power supply</b>			
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
<b>Housing</b>			
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
<b>Display</b>			
LCD multi-function display		60 mm x 45 mm	60 mm x 45 mm
<b>Instrument safety</b>			
	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

<sup>\*)</sup> 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 12/14 pH	28 520 3062
<b>Conductivity meters</b>		
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
<b>Oxygen meter</b>		
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, complete, ready to use with pH combination electrode BlueLine 24-3 pH, 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, complete, ready to use with pH combination electrode BlueLine 24-3 pH, 4-pole conductivity cell LF 413-3 T, oxygen sensor 9009/63, calibration and maintenance accessories	handylab multi 12-Set	28 520 3519
<b>Accessories</b>		
Redox combination electrode with plug head	BlueLine 31 Rx	28 512 9311
Plug cable combination e.g. for BlueLine 31 Rx, 1 m cable, DIN plug	LB 1 A	28 512 2653
Electrolyte solution KCl 3 mol/l, 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; 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 (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, for handylab pH meters	Z 384	28 520 4848
Protective armouring with holder and carrying handle, for handylab pH meters	Z 385	28 520 4856
Holder set for protective armouring, for handylab OX12 meters	Z 386	28 520 4864
Rubberized elastic protective armouring with handle support, for all handylab meters	Z 387	28 520 4872
Universal mains power supply unit, 100...240 V for all handylab 12 models	Z 850	28 520 4889
Connecting cable for analogue recorder, for handylab pH 12, LF 12, OX12	Z 394	28 520 4942
Connecting cable for PC, for all handylab 12 models (software included)	Z 395	28 520 4959

*Subject to technical changes.*

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