# Performance black on white...



Measuring technology in detail	Lab 850	Lab 860	Lab 870	Lab 960	Lab 970	ProLab 1000	ProLab 2000	ProLab 3000	ProLab 4000
page		p. 4/5	p. 4/5	p. 6/7	p. 6/7	p. 8/9	p. 10/11	p.12/13	p. 14/15
pH measurement	•	•	•			•		•	•
Range / Accuracy	-2.000 +19.999 pH -2.00 +19.99 pH	-2.000 +19.999 pH -2.00 +19.99 pH	-2.000 +19.999 pH -2.00 +19.99 pH			-2.000 +20.000 pH -2.00 +20.00 pH -2.0 +20.0 pH	-2.000 +20.000 pH -2.00 +20.00 pH -2.0 +20.0 pH	-2.000 +20.000 pH -2.00 +20.00 pH -2.0 +20.0 pH	-2.000 +20.000 pH -2.00 +20.00 pH -2.0 +20.0 pH
Accuracy (for each measuring area)	± 0.005 pH	± 0.005 pH	± 0.005 pH			± 0.003 pH	± 0.003 pH	± 0.002 pH	± 0.002 pH
(± 1 digit)	± 0.01 pH 16	± 0.01 pH	± 0.01 pH			± 0.01 pH	± 0.01 pH 22	± 0.01 pH 22	± 0.01 pH
Calibration: pre-programmed pH buffer sets	16	16	16			22			
Automatic buffer recognition and display	3	2	2			5	5	-	
pH calibration points max.	3	3	3			5	5	5	5
VariCal: manual calibration with selectable buffers	-	-	-			_	-	•	•
Dead stop function	-	-	-			•	-	_	_
2-channel pH measurement (galvanically separated)	-	_	_			-	-		
mV measurement	_	0000	000 0 000 0 1/			_	_	2200 0 2200 0 1/	2200 0 2200 0 1/
,	-999.9 +999.9 mV -1999 +1999 mV ± 0.3 mV	-999.9 +999.9 mV -1999 +1999 mV ± 0.3 mV	-999.9 +999.9 mV -1999 +1999 mV ± 0.3 mV			-1999.9 +1999.9 mV -1999 +1999 mV ± 0.2 mV	-1999.9 +1999.9 mV -1999 +1999 mV ± 0.2 mV	-2200.0 +2200.0 mV -2200 + 2200 mV ± 0.1 mV	-2200.0 +2200.0 mV -2200 + 2200 mV ± 0.1 mV
Accuracy (for each measuring area) (± 1 digit)	± 0.5 mV	± 0.5 mV	± 0.5 mV			± 0.2 mV	± 0.2 mV	± 0.1 mV	± 0.1 mV ± 1 mV
AutoRange function (can be switched off)								_	_
mV differential measurement	-	-	-			-	-		•
2-channel mV measurement (galvanically separated)	-	-	-			-	-	•	•
ISE measurement									
Range / Accuracy							0.000 10000 mg/l	1.0E-40 9.9E39 mg/l	1.0E-40 9.9E39 mg/l
Display in %, ppm, mg/kg, mol/l							-	•	•
Two separate ISE channels (with dedicated separate temperature channels)							-	•	•
Methods							-	Std. Add., Double Std. Add., Std.Sub., Sample Add., Sample Sub., Blank Add., Blank Corr., Ref. Measurem.	Std. Add., Double Std. Add., Std.Sub., Sample Add., Sample Sub., Blank Add., Blank Corr., Ref. Measurem.
ISE calibration points							2 3	2 9	2 9
Standard concentrations							0.01 bis 10 000 mg/l in	1.00E-30 1.00E30 mg/l	1.00E-30 1.00E30 mg/l
							19 selectable concentration	can be inserted	can be inserted
Conductivity measurement					0.000 5/ 500 5/				•
Range / Accuracy				0.000 μS/cm500 mS/cm	0.000 μS/cm500 mS/cm		0.000 μS/cm2000 mS/cm		0.000 μS/cm2000 mS/cm
TDS measurement with factor 0.4 1.0					_				
Salinity measurement acc. to Natural Sea Water Scale (UNESCO 1966b)					•				•
Accuracy in % from measuring value (± 1 digit)				0.5	0.5		0.5		0.5
Calibrated cell constant 0.450 0.500 cm <sup>-1</sup> ; 0.585 0.715 cm <sup>-1</sup> ; 0.800 1.200 cm <sup>-1</sup> (calibration with control standard) d 0.01 mol KCl:				•	•				•
Adjustable cell constant 0.250 2.500 cm <sup>-1</sup> and 0.090 0.110 cm <sup>-1</sup>				•	•		•		•
Fixed cell constant 0.010 cm <sup>-1</sup>				•					
Temperature compensation nLF / Lin (0.0013.000%/K) / selectable				•	•		•		•
Temperature compensation purity water				•	•				•
Pre-programmed temperature coefficients for HCl, NaOH, NaCl and KCl									•
Determination of temperature coefficients for one or multiple standards and known or unknown concentrations at various temperatures									•
Reference temperature 20°C or 25 °C selectable				•	•		•		
D.O. measurement (O <sub>2</sub> dissolved)									
Range / Accuracy: O, concentration							020.00 mg/l / 0.01 mg/l		
2							090.0 mg/l / 0.1		
O <sub>2</sub> saturation							0200.0 % / 0.1 % 0600 % / 1 %		
O <sub>2</sub> partial pressure							0200.0 mbar / 0.1 mbar 01250 mbar / 1 mbar		
Accuracy in % from measuring value (± 1 digit)							0.5		
at an ambient temperature of 530 °C Salinity correction									
Calibration in calibration vessel with									
water vapor-saturated air							•		

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Further technical details	Lab 850	Lab 860	Lab 870	Lab 960	Lab 970	ProLab 1000	ProLab 2000	ProLab 3000	ProLab 4000
 page	p. 4/5	p.4/5	p.4/5	p. 6/7	p. 6/7	p. 8/9	p.10/11	p.12/13	p.14/15
Temperature measurement			•		•				•
Range / Accuracy	-5.0 +120.0 °C	-10.0 +120.0 °C	-10.0 +120.0 °C	-35.0 +150.0 °C	-35.0 +150.0 °C				
Accuracy (± 1 digit)	± 0.1 °C								
Two separated temperature channels	-	-	-	-	-	-	-	•	•
Selectable °C / °F (Fahrenheit)			•			•			
Automatic switch-over to manual temperature input when no temperature sensor is connected		•	•		•	•		•	•
Design & Quality									
Display	LCD 75 x 60 mm	black & white graphic 120 x 90 mm with LED lighting	black & white graphic 120 x 90 mm with LED lighting	QVGA colour graphic display 120 x 90 mm with CFL lighting	QVGA colour graphic displa 120 x 90 mm with CFL lighting				
Contrast adjustment via menu	-	-	-	-	-			-	-
Glass vision panel	-	-	-	-	-				
Vision panel integrated in keyboard plastic foil		•		•		-	-	-	-
Measuring value storage (manual/automatic)	-	800 data sets, storage intervals from 5 s 60 min	-	800 data sets, storage intervals from 5 s 60 min	-	1500 data sets, storage intervals from 1 s 60 min	1500 data sets, storage intervals from 1 s 60 min	> 10 000 data sets, storage intervals from 1 s 60 min	> 10 000 data sets, storage intervals from 1 s 60 min
USB (slave) and RS232 interface		•		•			•		
USB host interface: plug and play connection of USB hub, USB printer, USB memory, keyboard, mouse, USB stick								•	•
Lower casing	plastic	plastic	plastic	plastic	plastic	metal diecast	metal diecast	metal diecast	metal diecast
Plastic foil keypad (polyester) with tactile response	•	•	•	•	•	•	•	•	•
Power supply: external universal power supply unit (medical approval) with country specific primary adapters, (primary: 100-240V, 50/60 Hz, secondary: 9V=1,5A)	•	•	•	•	-		•	•	•
built-in real-time clock (processor solution) battery buffered, exchangeable battery	•	•	•	•	•		•	•	•
Battery operation possible (4 mignon)		•				-	-	-	-
Battery switch-off automatic (adjustable 10 min 24 h, default 1 h, cannot be switched off)	-	•	•	•	-	-	-	-	-
Dimensions (B $\times$ H $\times$ T mm)	240 x 190 x 80	240 x 280 x 70							
Weight	ca. 1.0 kg	ca. 2.5 kg	ca. 2.5 kg	ca. 2.5 kg	ca. 2.5 kg				
Compliance	CE, cETLus								
Safety	protection class III, EG guidelines 73/23, EN 61010-1: 2001								
Climate class	2 (VDI/VDE 3540)								
Complete delivery scope: - Instrument with cover, power supply unit and stand - set additionally with electrode and buffer	•	•	•	•	•	•	•	•	•
IQ and OQ documents available		•		•					
Warranty 3 years									

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# Order information

Type no.	Product	Description	Order no.
Lab series			
Lab 850	Laboratory pH Meter	Measuring parameters pH, mV, temp. microprocessor, DIN 19262 connection. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201300
Lab 850 Set	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, DIN 19262 connection. Including cover Z 880, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode BlueLine 14 pH, calibration solutions (DIN).	285201310
Lab 850 BNC	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, BNC connection. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201360
Lab 850 BNC Set	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, BNC connection. Including cover Z 880, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode BlueLine 15 pH, calibration solutions (DIN).	285201370
Lab 860	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, data storage for 800 data sets, GLP conform, DIN 19262 connection. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201320
Lab 860 Set	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, storage for 800 data sets, GLP conform, DIN 19262 connection. Incl. cover Z 880, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode BlueLine 14 pH, calibration solutions (DIN).	285201330
Lab 860 BNC	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, data storage for 800 data sets, GLP conform, BNC connection. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201380
Lab 860 BNC Set	Laboratory pH Meter	Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, storage for 800 data sets, GLP conform, BNC connection. Including cover Z 880, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode BlueLine 15 pH, calibration solutions (DIN).	285201390
Lab 870	Laboratory pH Meter	Electrode recognition. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, DIN 19262 connection. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201340
Lab 870 Set	Laboratory pH Meter	Electrode recognition. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface,GLP conform, DIN 19262 connection. Including cover Z 880, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode BlueLine 14 pH ID, calibration solutions (DIN).	285201350
Lab 870 BNC	Laboratory pH Meter	Electrode recognition. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, BNC connection. Including cover Z 880, stand 54D Z 865 and power supply Z 850.	285201400
Lab 870 BNC Set	Laboratory pH Meter	Electrode recognition. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, CLP conform, BNC connection. Including cover z 880, stand S40 z 865, power supply Z 850, PH-temp. combination electrode BlueLine 15 pH ID, calibration solutions (DIN).	285201410
Lab 960	Laboratory Conductivity Meter	Measuring ranges 0.000 µS/cm500 mS/cm, salinity, total dissolved solids (TDS), temp., RS 232 C and USB (slave) interface, microprocessor, data storage for 800 data sets, GLP conform. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201420
Lab 960 Set	Laboratory Conductivity Meter	Measuring ranges 0.000 µS/cm500 mS/cm, salinity, total dissolved solids (TDS), temp., RS 232 C and USB (slave) interface, microprocessor, data storage for 800 data sets, GLP conform. Including cover Z 880, stand S4D Z 865, power supply Z 850, conductivity cell LF 813 T and conductivity testing solution.	285201430
Lab 970	Laboratory Conductivity Meter	Sensor recognition. Measuring ranges 0.000 µS/cm500 mS/cm, salinity, total dissolved solids (TDS), temp., RS 232 C and USB (slave) interface, microprocessor, GLP conform. Including cover Z 880, stand S4D Z 865 and power supply Z 850.	285201440
Lab 970 Set	Laboratory Conductivity Meter	Sensor recognition. Measuring ranges 0.000 μS/cm500 mS/cm, salinity, total dissolved solids (TDS), temp., RS 232 C and USB (slave) interface, microprocessor, GLP conform. Including cover Z 880, stand S4D Z 865, power supply Z 850, conductivity cell LF 913 T ID and conductivity testing solution.	285201450
ProLab series			
ProLab 1000	Digital laboratory pH Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, DIN 19262 connection. Including cover Z 881, stand S4D Z 865 and power supply Z 850.	285201700
ProLab 1000 Set	Digital laboratory pH Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, DIN 19262 connection. Including cover Z 881, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode A 161 1M-DIN-ID, calibration solutions (DIN).	285201710
ProLab 1000 BNC	Digital laboratory pH Meter	Electrode recognition and user identification. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, BNC connection. Including cover Z 881, stand S4D Z 865 and power supply Z 850.	285201720
ProLab 1000 BNC Set	Digital laboratory pH Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, BNC connection. Including cover Z 881, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode A 161 1M-BNC-ID, calibration solutions (DIN).	285201730
ProLab 2000	Digital laboratory multi Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, ISE, conductivity, D.O. and temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, DIN 19262 connection. Including cover Z 881, stand S4D Z 865 and power supply Z 850.	285201740
ProLab 2000 Set	Digital laboratory multi Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, ISE, conductivity, D.O. and temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, DIN 19262 connection. Including cover Z 881, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode A 161 1M-DIN-ID, combined conductivity and D.O. sensor LFOX 1400 ID, calibration solutions (DIN), conductivity testing solutions.	285201750
ProLab 2000 BNC	Digital laboratory multi Meter	Electrode recognition and user identifi cation. Measuring parameters pH, mV, ISE, conductivity, D.O. and temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, BNC connection. Including cover Z 881, stand S4D Z 865 and power supply Z 850.	285201760
ProLab 2000 BNC Set	Digital laboratory multi Meter	Electrode recognition and user identification. Measuring parameters pH, mV, ISE, conductivity, D.O. and temp., microprocessor, RS 232 C and USB (slave) interface, GLP conform, BNC connection. Including cover Z 881, stand S4D Z 865, power supply Z 850, pH-temp. combination electrode A 161 1M-BNC-ID, combined conductivity and D.O. sensor LFOX 1400 ID, calibration solutions (DIN), conductivity testing solutions	285201770

Type no.	Product	Description	Order no.
ProLab 3000	Digital laboratory pH Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. DIN connection. Incl. Z880, Z865 + Z850.	285203600
ProLab 3000 Set	Digital laboratory pH Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: conductivity 4 double-pH, mV, Temp, ISE. RS232, USB nost + USB slave interfaces. DIN connection. Incl. 2880, 2865 + 2890. 2880, 2865, 2850, A161 IND-IN-ID, DIN buffers.	285203610
ProLab 3000 BNC	Digital laboratory pH Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. BNC connection. Incl. Z880, Z865 + Z850	285203620
ProLab 3000 BNC Set	Digital laboratory pH Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. BNC connection. Incl. Z880, Z865, Z850, A161 1M-BNC-ID, DIN buffers.	285203630
ProLab 4000	Digital laboratory multi Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: conductivity + double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. DIN connection. Incl. Z880, Z865 + Z850.	285203640
ProLab 4000 Set	Digital laboratory multi Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: conductivity + double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. DIN connection. Incl. Z880, Z865, Z850, A161 1M-DIN-ID, LF413TID, DIN buffer, conductivity testing solution.	285203650
ProLab 4000 BNC	Digital laboratory multi Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: conductivity + double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. BNC connection. Incl. Z880, Z865 + Z850.	285203660
ProLab 4000 BNC Set	Digital laboratory multi Meter	Electrode recognition and user identifi cation. QVGA colour display. Menu based operation. Recorder function. Measuring parameters: conductivity + double-pH, mV, Temp, ISE. RS232, USB host + USB slave interfaces. BNC connection. Incl. Z880, Z865, Z850, A161 1M-BNC-ID, LF413TID, DIN buffer, conductivity testing solution.	285203670
Accessories			
Logbook Lab 850	Logbook	for Lab 850 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285201800
Logbook Lab 860	Logbook	for Lab 860 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285201810
Logbook Lab 870	Logbook	for Lab 870 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285201820
Logbook Lab 960	Logbook	for Lab 960 incl. review by SCHOTT Instruments after resending the filled in documents.	285201840
Logbook Lab 970	Logbook	for Lab 970 incl. review by SCHOTT Instruments after resending the filled in documents.	285201850
Logbook ProLab 1000	Logbook	for ProLab 1000 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285201830
Logbook ProLab 2000	Logbook	for ProLab 2000 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285201860
Logbook ProLab 3000	Logbook	for ProLab 3000 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285203680
Logbook ProLab 4000	Logbook	for ProLab 4000 (DIN and BNC) incl. review by SCHOTT Instruments after resending the filled in documents.	285203690
Z 390	Cable for connection to PC	RS 232 6pole cable for connection to PC for Lab 860, Lab 870, Lab 960 and Lab 970 as well as for all instruments being part the ProLab series	285201560
Z 396	Software	Softwware for documentation for Lab 860, Lab 870, Lab 960, Lab 970, handylab 12 as well as for all instruments being part of the ProLab series	285201580
Z 850	Power supply	Universal power supply unit, 230 and 120 V for the Lab- and ProLab-meter family	285204889
Z 865	Stand set S4D	Stand set S4D, including arm and electrode holder for the Lab- and ProLab-meter family	285201520
Z 875	USB cable	for Lab 860, Lab 870, Lab 960 and Lab 970 as well as for all instruments of the ProLabmeter series with USB (slave)	285201540
Z 876	Transponder	User recognition transponder for ProLab instruments	285201890
Z 880	Cover	for the Lab-meter family	285201550
Z 881	Cover	for the ProLab-meter family	285201880
Z 890	Universal paper printer	Star SP-712 (9-matrix printer). Easy paper load. Serial interface.  Dimensions: 160 (width) x 245 (depth) x 152 (height) mm. Weight 2.96 kg. Integrated power supply	285203700
Z 891	ink riboon (black)	for printer Z 890. Product life cycle: 3 million charachters.	285203710
Z 892	printer paper role	for printer Z 890, 1 piece. Universal paper. Width 76 mm. External diameter 80 mm, inner core 12 mm.	285203720
Z 893	Connecting cable	for connection of printer Z 890 to the ProLab metrs (except Lab 850) and ProLab-meter family.	285203730
	Manufacturer certificate	for pH-Meter, conductivity meter and pH/mV simulators from SCHOTT Instruments	285209081

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## ID electrodes: for highest safety

### **ID** electrodes for pH measurement

Shaft material:

glass

Zero point:

 $pH = 7.0 \pm 0.3$ 

pH range: Reference system:

0 ... 14 Silamid® KCI 3 mol/l,

Reference electrolyte:

Fixed cable:

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gel or Referid® 1 m long, with DIN or BNC plug



pH ID BlueLine 15 pH ID

A 7780 1M-DIN-ID A 7780 1M-

ID

H 64 1M-DIN-H 64 1M-BNC-

A 161 1M-DIN-ID A 161 1M-

H 161 1M-DIN-ID H 161 1M-BNC-ID

A 164 1M-DIN-ID A 164 1M-BNC-ID







DIN-ID

N 1048 1M-





N 6000 1M-DIN-ID N 6000 1M-BNC-ID



Temperature sensor: NTC 30 KOhm

Fixed cable:

1 m long, 8-pole plug

\*LFOX 1400 ID additionally with oxygen measurement

## ID electrodes for pH measuring

L 6880 1M-

L 6880 1M-

DIN-ID

BNC-ID

Micro, spear tip and surface combination electrodes

Shaft material: glass

(except L 39 and BlueLine 21:

plastic shaft)

 $pH = 7.0 \pm 0.3$ Zero point:

pH range: 0 ... 14

(except L 39,

BlueLine 21 and 27: 1 ... 13 pH)

Reference system: Silamid®,

silver/silver chloride

Reference electrolyte: KCl 3 mol/l,

gel or Referid®

Fixed cable: 1 m long,

> with DIN or BNC plug and plug for temperature sensor



