Multi-parameter measurement

Content

WTW
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Applications and meters overview

pH, ORP potential, ion concentration, dissolved oxygen, conductivity, turbidity - if at least two of these main parameters have to be measured, a multi-parameter instrument can make sense.

✔ yes
● yes

✔ recommended
✔ recommended for some applications
– not recommended

| | Digital | | | Analogue | Digital | | | Analogue | |
| | inoLab® Multi IDS | | | inoLab® | MultiLine IDS | | | ProfiLine | |
	Multi 9630	Multi 9620	Multi 9310	pH/ION 7320	Multi 3630	Multi 3620	Multi 3510	Multi 3320	pH/Cond 3320
2 parameters simultaneously	✔	✔		✔	✔	✔		✔	✔
3 parameters simultaneously	✔				✔				
pH/ORP	●	●	●	●	●	●	●	●	●
Ion-selective measurement (ISE)	●	●		●				●	●
Dissolved oxygen	●	●	●		●	●	●	●	
Conductivity	●	●	●		●	●	●	●	●
Turbidity	●	●	●		●	●	●		
Routine measurements	✔	✔	✔	✔	✔	✔	✔	✔	✔
Routine measurements with documentation	✔	✔	✔	✔	✔	✔	✔	✔	✔
Wireless ready	✔	✔	✔		✔	✔	✔		
AQA with documentation	✔	✔	✔	✔	✔	✔	✔	✔	✔
R&D – high resolution and precision	✔	✔	✔	✔	✔	✔	✔	✔	✔
Control measurements	✔	✔	✔	✔	✔	✔	✔	✔	✔
LIMS connection	✔	✔	✔	✔	✔	✔	✔	✔	✔
Quality assurance	✔	✔	✔	✔	✔	✔	✔	✔	✔
Education	✔	✔	✔	✔	✔	✔	✔	✔	✔
Service	–	–	–	–	✔	✔	✔	✔	✔
Laboratory measurements	✔	✔	✔	✔	✔	✔	✔	✔	✔
Field measurement	–	–	–	–	✔	✔	✔	✔	✔
Depth measurements	–	–	–	–	✔	✔	✔	–	–
PC connection	✔	✔	✔	✔	✔	✔	✔	✔	✔
Memory	✔	✔	✔	✔	✔	✔	✔	✔	✔
USB interface	✔	✔	✔	✔	✔	✔	✔	✔	✔
Graphic display			✔	✔			✔	✔	✔
color graphic display	✔	✔			✔	✔			
Compatible sensor system									
IDS pH/ORP electrodes 28/32	✔	✔	✔		✔	✔	✔		
IDS Optical dissolved oxygen sensors 33	✔	✔	✔		✔	✔	✔		
IDS conductivity cells 34	✔	✔	✔		✔	✔	✔		
IDS Turbidity sensor 36	✔	✔	✔		✔	✔	✔		
IDS Depth Sonde 38					✔				
Analogue pH/ORP electrodes 65/73	*)	*)	*)		*)	*)	*)	✔	✔
Analogue ISE electrodes 81	*)	*)						✔	
Analogue dissolved oxygen sensors 92								✔	
Analogue conductivity cells 106								✔	✔
	Multi 9630	Multi 9620	Multi 9310	pH/ION 7320	Multi 3630	Multi 3620	Multi 3510	Multi 3320	pH/Cond 3320
see page	40	40	41	56	44	45	46	49	50

* with adapter

Parameters
Multi parameter
pH
ORP
ISE
Dissolved Oxygen
Conductivity
BOD/Respiration
Photometry
Turbidity
Software, Documentation

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The WTW IDS world: Digital and innovative

The WTW IDS concept: Intelligent digital sensors for the standard parameters pH, conductivity , dissolved oxygen and turbidity.

The IDS system consists of two components: Digital sensors and matching portable and laboratory meters. The essential innovation is that the processing of the measured signals no longer takes place in the meters, but exclusively in the sensor.

WTW IDS sensors: Digital, unique, distinctive

Based on the proven electrochemical WTW sensors, combined with state-of-the-art electronics, the new IDS sensors can store their serial number and calibration data in the sensor leerzeichen. This store information makes it easy to use one sensor on multiple meters.

However, the IDS sensors do not only store data but also process signals and thereby improve data quality. This also allows an evaluation of the sensor quality with pH electrodes by means of the QSC (Quality Sensor Control) function.

Benefits of IDS

- Fail-safe measurement data by direct conversion of the raw signal in the sensor.

- All sensor, meter and user data are available for automatic documentation.

- Calibration data are stored directly in the sensor independently of the meter, and are therefore not lost.

- In addition to the measurement and calibration data, further additional information can be transmitted.

Proven sensor technology

Based upon the tens of thousands of proven WTW sensors of the SenTix®, SensoLyt® and TetraCon® series, the IDS sensors provide more precision and reliability and cover almost any application.

Freely connected – IDS goes wireless

Trend-setting for the digital laboratory: The meters of the IDS system can now also be expanded with wireless measured value transmission. New, universal wireless modules simplify work wherever cables and meters get in the way or there is simply too little space available.

Cond

pH

Cond

INTELLIGENT **I D**
DIGITAL **D S**
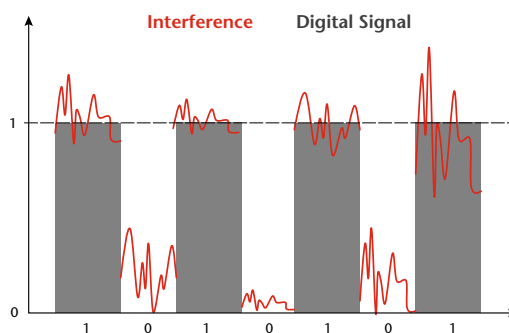SENSORS
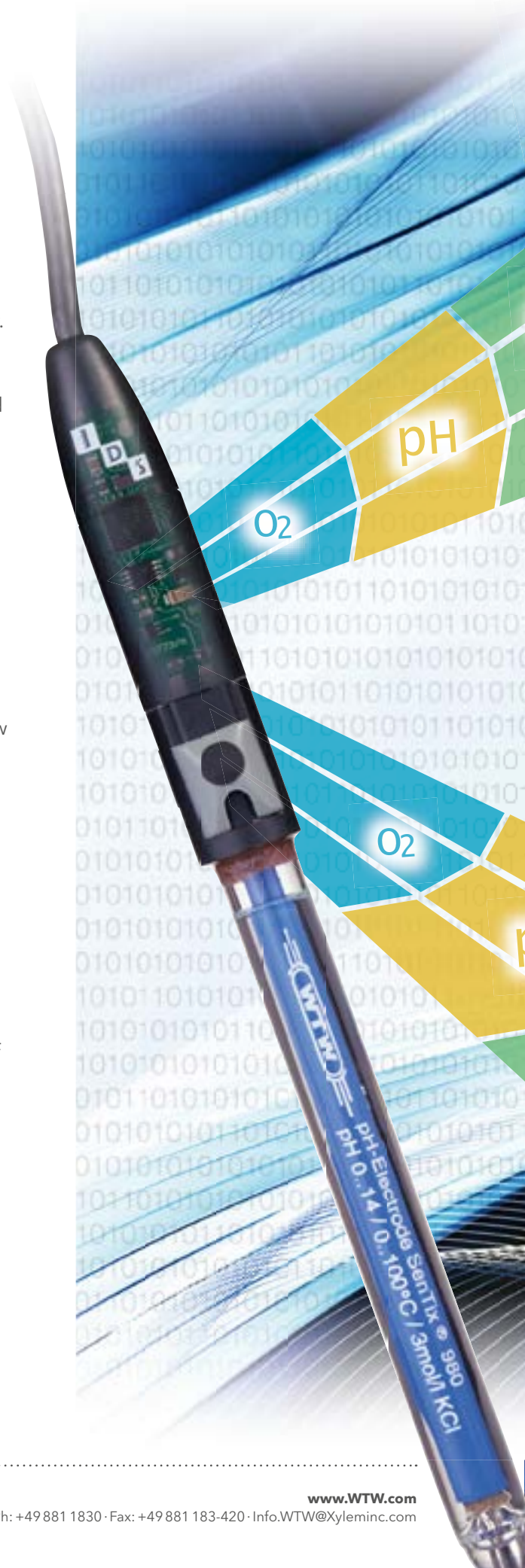
I as intelligent:

IDS sensors are intelligent. They log into the meter automatically, submit their description, serial number, calibration status and history, as well as all other parameters.

D as digital:

IDS sensors convert the sensitive measuring signals in the sensor head into digital signals and transmit them to the meter without interference and errors, no matter if using a cable or a wireless module.

S as sensor:

IDS sensors are based on proven and continuously enhanced WTW sensors. They cover almost any application, including pH, conductivity, dissolved oxygen or turbidity measurement.

Interference   **Digital Signal**

1

0

1   0   1   0   1   0   1

Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

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IDS goes wireless: freely connected

Measure with wireless sensors where ever you want!

The new wireless modules for IDS plug head sensors are simply plugged onto the sensor and automatically connect to the meter- safely and clearly. No cables, no tugging, just freedom to move where a meter would usually be in the way. Even with portable field measurements under difficult conditions, one hand is always free. Recording measurement values is as easy as simply pressing a button on the sensor module!

- ◉ **Wireless measurement**
- ◉ **Securely connected**
- ◉ **One module for all parameters**

Wireless pH/ORP measurements

The pH measurement as the most important electrochemical measurement is carried out practically everywhere. And therefore most often in confined conditions in the laboratory, in the wet area, under laminar flow benches or fume hoods - just where cables are cumbersome to handle and meters are not desirable.

- Flexible - Plug head electrodes work with both cables as well as with wireless modules
- Easy processing of long measurements series in life science applications
- Penetration measurements in the food industry

Wireless oxygen measurements

- BOD measurement in Karlsruher or Winkler bottles
- Full freedom of movement for sensor user
- Safe handling without cable tugging

Wireless conductivity measurement

- Measurement under fume hoods, laminar flow benches or in confined spaces
- Series measurement in wastewater laboratory
- Flow-through measurements with groundwater pumping tests

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Unleash your sensor!

Plug the wireless module onto the IDS plug head sensor, confirm wireless connection - that's it!

All WTW-IDS sensors with plug head can be used.

Intelligent module on the meter

The module on the IDS meter receives either one, two or three parameters simultaneously, depending on the number of available channels.

Exchangeable modules for multiple sensors

Exchange the module from sensor to sensor or use a separate module for each sensor.

Cascadable charging stations and complete sets are available.

Technical specifications: IDS wireless modules

Wireless transmission	Bluetooth LE
Range	Approx. 10 m with intermediate walls and approx. 50 m line of sight
Supply	Rechargeable LiPo battery pack 230 mAh
Operating times (continuously)	IDS pH electrode 60 h
	IDS ORP electrode 60 h
	IDS conductivity cell 30 h (conductivity up to 1S/cm)
	IDS dissolved oxygen sensor 9 h
	Turbidity sensor 5 h
Signal	RGB-LED
Protection class	IP54
Usable sensors	All WTW IDS sensors with plug head

Order information: IDS wireless modules

Model	Description	Order no.
IDS WLM Kit	Kit consisting of a wireless module for sensor and meter, USB charger and universal USB power supply	108144
IDS WLM-S	Wireless module for plug head sensor	108141
IDS WLM-M	Wireless module for IDS meter	108142
WLM Charger	USB charger for wireless modules, cascadable, (up to 5 units, with WTW power supply), scope of delivery without power supply	108143
NT USB Universal	Universal USB power supply	902872

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IDS pH electrodes

pH measurement shows a wide range of applications, from routine measurement in aqueous solutions up to special applications in a variety of media such as strong acid or alkaline solutions, with suspended solids or non-aqueous phases. The sample consistency can vary from liquid to firm, and measurements can be taken in a sheltered laboratory environment or outdoors in harsh conditions. Across all these variables, the range of IDS electrodes has the solution.

IDS pH electrodes for water, wastewater and other aqueous samples

- SenTix® 940(-P)
  Low-maintenance pH electrode with robust plastic shaft with gel electrolyte

- SenTix® 945(-P)
  Low-maintenance, fast-response pH electrode with a gel reference system and three ceramic junctions for the laboratory

- SenTix® 950(-P)
  Robust, liquid-filled electrode with plastic shaft and ceramic junctions for portable field measurement

- SenTix® 980(-P)
  Precision pH electrode with platinum wire junction and glass shaft for the laboratory

- SensoLyt® 900-P
  Pressure-resistant pH electrode with polymer electrolyte for depth measurement

(1)   (2)   (3)   (4)   (5)   (6)   (7)   (8)   (9)

from left to right: the digital IDS sensors and wireless ready IDS plug head electrodes (1) SenTix® 940, (2) SenTix® 940-P, (3) SenTix® 945, (4) SenTix® 945-P, (5) SenTix® 950, (6) SenTix® 950-P, (7) SenTix® 980, (8) SenTix® 980-P, (9) SensoLyt® 900-P

pH electrodes for special samples (suspensions, emulsions, high and low ion concentrations)

- SenTix® HW-T 900(-P)
  Precision pH electrode with liquid electrolyte; adjustable split ring junction

pH measurement in semi-solid or viscous samples

- SenTix® Sp-T 900(-P)
  pH electrode with spear-shaped membrane for penetration measurements

pH measurement in small vessels

- SenTix® Micro 900(-P)
  Micro pH electrode with 5 mm shaft diameter and built-in Temperature probe

◉ **Secure measurement values by means of signal processing in the sensor**

◉ **Easy electrode exchange thanks to calibration data stored in the sensor**

◉ **Sensor quality monitoring through QSC function**

(1) (2) (3) (4) (5) (6)

from left to right: the digital IDS special electrodes and wireless ready IDS plug head electrodes (1) SenTix® HW-T 900, (2) SenTix® HW-T 900-P, (3) SenTix® Sp-T 900, (4) SenTix® Sp-T 900-P, (5) SenTix® Micro 900-P, (6) SenTix® Micro 900-P

Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Multi parameter Documentation

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Technical specifications and order information:

Low maintenance IDS pH electrodes with gel reference system

	SenTix® 940	SenTix® 940-3	SenTix® 940-P	SenTix® 945	SenTix® 945-P
Order no.	103740	103741	103760	103743	103764
Measuring range pH	0 ...14 pH	0 ...14 pH	0 ...14 pH	0 ...14 pH	0 ...14 pH
Temperature range	0 ... + 80 °C	0 ... + 80 °C	0 ... + 80 °C	0 ... + 80 °C	0 ... + 80 °C
Reference system	Gel	Gel	Gel	Gel	Gel
Membrane shape	Cylinder	Cylinder	Ball	Ball	Cylinder
Junction	Fibre	Fibre	Fibre	3 x Ceramic	3 x Ceramic
Shaft material	Noryl	Noryl	Noryl	Glass	Glass
Shaft length	120 mm	120 mm	120 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm
Temperature probe	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm
Cable length	1.5 m	3 m	1.5 ... 100 m, wireless	1.5 m	1.5 ... 100 m, wireless

Precision IDS pH electrodes with 3 mol/l KCl liquid reference

	SenTix® 950	SenTix® 950-P	SenTix® 980	SenTix® 980-P
Order no.	103750	103761	103780	103762
Measuring range pH	0… 14 pH	0… 14 pH	0…14 pH	0…14 pH
Temperature range	0 …80 °C	0 …80 °C	0 ... + 100 °C	0 ... + 100 °C
Reference system	KCl 3 mol/l Ag+ free	KCl 3 mol/l Ag+ free	KCl 3 mol/l Ag+ free	KCl 3 mol/l Ag+ free
Membrane shape	Cylinder	Cylinder	Cone	Cone
Diaphragm	Ceramic	Ceramic	Platinum wire	Platinum wire
Shaft material	PPE	PPE	Glass	Glass
Shaft length	120 mm	120 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm
Temperature probe	NTC 30 KOhm	NTC 30 KOhm	NTC 30 kOhm	NTC 30 kOhm
Cable length	1.5 m	1.5 m	1.5 m	1.5 ... 100 m, wireless

LAB & FIELD INSTRUMENTATION > Parameter > Multi-parameter measurement > IDS pH electrodes

Parameters

Multi parameter

pH

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Software, Documentation

Special IDS-pH electrodes

	SenTix® Micro 900	SenTix® Micro 900-P	SensoLyt® 900-P
Order no.	103751	103765	103748
Measuring range pH	0…14 pH	0…14 pH	0…12 pH
Temperature range	0 ... + 100 °C	0 ... + 100 °C	0 ... 60 °C
Reference system	KCl 3 mol/l Ag+ free	KCl 3 mol/l Ag+ free	Polymer
Membrane shape	Cylinder	Cylinder	Cylinder
Junction	Platinum wire	Platinum wire	Hole
Shaft material	Glass	Glass	Glass
Shaft length	65/130 mm	65/130 mm	120 mm
Shaft diameter	12/5 mm	12/5 mm	12 mm
Temperature probe	NTC 30 KOhm	NTC 30 KOhm	NTC 30 KOhm
Cable length	1.5 m	1.5 ... 100 m, wireless	1.5 ... 100 m, wireless

	SenTix® HW-T 900	SenTix® HW-T 900-P	SenTix® SP-T 900	SenTix® SP-T 900-P
Order no.	103753	103767	103752	103766
Measuring range pH	0…14 pH	0…14 pH	2…13 pH	2…13 pH
Temperature range	0 ... + 60 °C	0 ... + 60 °C	0 ... + 80 °C	0 ... + 80 °C
Reference system	KCl 3 mol/l Ag+ free	KCl 3 mol/l Ag+ free	Polymer	Polymer
Membrane shape	Cylinder	Cylinder	Spear	Spear
Junction	Split ring	Split ring	Hole	Hole
Shaft material	Glass	Glass	Glass	Glass
Shaft length	170 mm	170 mm	65/25 mm	65/25 mm
Shaft diameter	12 mm	12 mm	15/5mm	15/5mm
Temperature probe	NTC 30 KOhm	NTC 30 KOhm	NTC 30 KOhm	NTC 30 KOhm
Cable length	1.5 m	1.5 ... 100 m, wireless	1.5 m	1.5 ... 100 m, wireless

Accuracy IDS electronics ±0.004 pH
mV ± 0.2 mV

Adapter for analogue pH electrodes

An adapter for all analogue pH electrodes with S7 plug head
allows the connection of special electrodes to any IDS multi-
parameter meters.

ADA S7/IDS

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IDS ORP electrodes

There are two different IDS ORP electrodes for the measurement, one for the standard applications in the laboratory and the other for field use.

- **Secure measurement values by means of signal processing in the sensor**
- **Integrated temperature probe NTC 30 kOhm for precise value documentation**
- **Best possible GLP support through documentation of the sensor data**

Universal ORP electrode with platinum round blank for laboratory applications

- SenTix® ORP-T 900(-P)

Pressure-resistant IDS platinum ORP electrode for measurement at depth

- SensoLyt® ORP 900-P

Technical specifications and order information: SenTix® IDS ORP electrodes

	SenTix® ORP-T 900	SenTix® ORP-T 900-P	SensoLyt® ORP 900-P
Order no.	103791	103763	103749
Measuring range	-1250.0 … +1250.0 mV	-1250.0 … +1250.0 mV	-1250.0 … +1250.0 mV
Work area °C	0 … 100 °C	0 … 100 °C	- 5 … 100 °C
Reference electrolyte	KCl 3 mol/l	KCl 3 mol/l	0 … 60 °C
Sensor	Platinum	Platinum	Platinum
Sensor form	(4 mm)	(4 mm)	Ring
Junction	Ceramic	Ceramic	Hole
Shaft material	Glass	Glass	Glass
Shaft length (±2 mm)	120 mm	120 mm	120 mm
Shaft-Ø (±0,5 mm)	12 mm	12 mm	12 mm
Temperature probe	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm
Cable length	1.5 m	1.5 … 100 m, wireless	1.5 … 100 m, wireless, pressure-resistant up to 10 bar

Accuracy IDS electronics ± 0.2 mV

IDS optical dissolved oxygen sensor

Up-to-date standard compliant oxygen measurement

The most modern type of oxygen measurement: No chemicals, no electrolytes, instead a membrane cap with a special oxygen-selective dye. Measurement without maintenance effort, fast and precise - and recognised as per DIN ISO 17289: 2014-12 as standard method for measurement of dissolved oxygen.

- **Saves time and money - low-maintenance and fast ($t_{99} < 60s$)**
- **Flow-free; with chamfered membrane**
- **Factory-calibrated sensor cap with smart chip**

Precise, flow-free optical IDS dissolved oxygen sensor for field and laboratory use.

- FDO® 925(-P)

Technical specifications and order information: IDS dissolved oxygen sensors

	FDO® 925	FDO® 925-3	FDO® 925-P
Order no.	201300	201301	201306
Method	Optical	Optical	Optical
Response time T_{99} (20 °C)	< 60 s	< 60 s	< 60 s
Measuring range concentration	0.00…20.00 mg/l ± 0,5 % of measured value	0.00…20.00 mg/l ± 0,5 % of measured value	0.00…20.00 mg/l ± 0,5 % of measured value
Measuring range saturation	0.0 … 200.0 % ± 0,5 % of measured value	0.0 … 200.0 % ± 0,5 % of measured value	0.0 … 200.0 % ± 0,5 % of measured value
Measuring range partial pressure	0.0 to 400 hPa ± 0.5 % of measured value	0.0 to 400 hPa ± 0.5 % of measured value	0.0 to 400 hPa ± 0.5 % of measured value
Temperature	0 … 50.0 °C ± 0.2 °C	0 … 50.0 °C ± 0.2 °C	0 … 50.0 °C ± 0.2 °C
Membrane shape	Chamfered	Chamfered	Chamfered
Shaft material	POM, stainless steel	POM, stainless steel	POM, stainless steel
Shaft length	140 mm	140 mm	140 mm
Diameter	15.3 mm	15.3 mm	15.3 mm
Cable length	1.5 m	3 m	1.5 … 100 m, wireless, pressure-resistant up to 10 bar

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IDS conductivity cells

Two important parameters affect conductivity measurements: the cell constant and temperature compensation. Both must be specified manually when using different cells and analogue meters. With IDS conductivity cells, these data are transferred automatically - a clear advantage in measurement reliability!

- **Proven two or four electrode technology**

- **Easiest handling, robust design**

- **Broad application range from ultrapure water up to highly concentrated solutions**

| **IDS graphite cells for universal use** | **IDS Graphite measuring cells for special applications** | **Two electrode ultrapure water measuring cell** |

IDS graphite cells for universal use

- TetraCon® 925(-P)

Universal measuring cell for laboratory and field

IDS Graphite measuring cells for special applications

- TetraCon® 925/C

Modified measuring cell with acid-proof PEEK head

- TetraCon® 925/LV(-P)

Measuring cell for small volumes and viscous samples

Two electrode ultrapure water measuring cell

- LR 925/01(-P)

Two electrode measuring cell for conductivities up to 200 µS/cm

(1) (2) (3) (4) (5) (6) (7)

from left to right: the digital IDS sensors and wireless ready IDS plug head electrodes (1) TetraCon® 925, (2) TetraCon® 925-P, (3) TetraCon® 925 / C, (4) TetraCon® 925 / LV, (5) TetraCon® 925 / LV-P, (6) LR 925/01, (7) LR 925/01-P

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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Specifications and order information: IDS conductivity cells
Universal applications:

	TetraCon® 925	TetraCon® 925-3	TetraCon® 925-P
Order number	301710	301711	301716
Type	4 electrode	4 electrode	4 electrode
Electrode material	Graphite	Graphite	Graphite
Flow through vessel	-	-	-
Shaft material	Epoxy	Epoxy	Epoxy
Shaft length	120 mm	120 mm	120 mm
Cell constant	0.475 cm^{-1}	0.475 cm^{-1}	0.475 cm^{-1}
Diameter	15.3 mm	15.3 mm	15.3 mm
Measurement range	1 µS/cm to 2000 mS/cm	1 µS/cm to 2000 mS/cm	1 µS/cm to 2000 mS/cm
Temperature range	0 to 100 °C	0 to 100 °C	0 to 100 °C
Temperature sensor	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm
min./max. immersion depth	36/120 mm	36/120 mm	36/120 mm
Cable length	1.5 m*	3 m	1.5 … 100 m, wireless, pressure resistant up to 10 bar

Special applications

	TetraCon® 925/C	TetraCon® 925/LV	TetraCon® 925/LV-P
Order number	301721	301718	301719
Type	4 electrode	4 electrode	4 electrode
Electrode material	Graphite	Graphite	Graphite
Shaft material	Epoxy	Epoxy	Epoxy
Shaft length	120 mm	120 mm	120 mm
Cell constant	0.475 cm^{-1}	0.469 cm^{-1}	0.469 cm^{-1}
Diameter	15.3 mm	15.3 mm	15.3 mm
Measurement range	1 µS/cm … 2000 mS/cm	1 µS/cm … 2000 mS/cm	1 µS/cm … 2000 mS/cm
Temperaturbereich	0 … 100 °C	0 … 100 °C	0 … 100 °C
Temperature sensor	NTC 30 kOhm	NTC 30 kOhm	NTC 30 kOhm
min./max. immersion depth	36/120 mm	16/120 mm	
Cable length	1.5 m	1.5 m	1.5 … 100 m, wireless, pressure resistant up to 10 bars

Ultra pure water applications

	LR 925/01	LR 925/01-P
Order number	301720	301722
Electrode material	Stainless steel V4A	Stainless steel V4A
Flow through vessel	Glass	Glass
Shaft material	Stainless steel V4A	Stainless steel V4A
Shaft length	120 mm	120 mm
Cell constant	0.1 cm^{-1}	0.1 cm^{-1}
Diameter	12 mm	12 mm
Measurement range	0.01 … 200 µS/cm	0.01 … 200 µS/cm
Temperature range	0…100 °C	0…100 °C
Temperature sensor	NTC 30 kOhm	NTC 30 kOhm
Volume	17 ml (without sensor)	17 ml (without sensor)
min./max. immersion depth	30/120 mm	30/120 mm
Cable length	1.5 m	1.5 … 100 m, wireless

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IDS turbidity sensor

The new VisoTurb® 900-P is an infrared turbidity sensor for direct measurement in the medium for laboratory and mobile applications. Application areas are surface water, pumping tests, groundwater, monitoring of filters in food and beverage production, and anywhere turbidity needs to be measured quickly and easily.

The VisoTurb® 900-P conforms to DIN ISO 27027 with infrared light at a scattering angle of 90°.

- **Handy turbidity sensor with titanium shaft**
- **Simple 2- or 3-point calibration**
- **Suitable for multi-parameter measurement with MPP-IDS**

VisoTurb® 900-P

Technical specifications and order information: IDS turbidity sensor

	VisoTurb® 900-P
Order no.	600700
Parameter	FNU or NTU
Temperature	Operating temperature: -5 to 50 °C
Measuring range	0 to 4000 FNU
Accuracy	0 to 999 FNU: 0.3 FNU or ±2 %, (depending which is larger) 1000 to 4000 FNU: ± 5 % of the value
Wavelength of the exciting light	860 nm ± 15 nm
Measurement angle	90°
Pressure resistance (IP 68)	10 bar
Connection	1.5 … 100 m, wireless

Accessories for IDS sensors

Protection for IDS sensors

Measurements in the field required robust meters and sensors. There are a wide rage of accessories available to further enhance the protection of your instruments.

Protection accessories are available to avoid damaging sensors during usage in harsh conditions such as in floodwater, boreholes, rivers containing debris, or in channels and tanks.

The range extends from plastic protection for pH laboratory electrodes used in mobile application in the field and in production up to a solid stainless steel version, which simultaneously acts as a sinker.

A pHLab/K:
- Protection for precision pH electrodes with 120 mm glass shaft
- Significantly reduces the risk of breakage when measuring in the process and in the field

A 925/K, A 925/K-P and A 925/S-P:
- Protection for tough field use of pressure-resistant IDS sensors
- Version for IDS sensors with and without plug head

Flow-through measurement in the field

For groundwater measurement, there is a flow-through vessel with the possibility to measure up to three parameters simultaneously. Pump measurement in the field is made easier with a tripod for uneven ground or the pole support. The hose connections are designed for standard 19 mm (3/4") garden hoses.

D 3Sen for mast assembly   D 3Sen in a tripod ground stand

Order information: Accessories for IDS sensors

Model	Description	Order no.
A 925-P/K	Protection for IDS field sensors with plug head, plastic	903839
A 925-P/S	Protection for IDS field sensors with plug head, stainless steel	903840
A pHLab/K	Protection for pH and ORP electrode with a length of 120 mm	903841
D 3Sen	Flow-through vessel in a tripod ground stand for up to three pH, ORP, oxygen or conductivity sensors (also IDS versions)	903842
Accessories see price list or www.WTW.com		

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www.WTW.com
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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Depth sonde MPP 930 IDS

- **Measures pH, conductivity, dissolved oxygen and turbidity - up to three main parameters simultaneously, plus depth and temperature**

- **Barometric pressure-compensated depth measurement for accurate results**

- **Profile measurement without tangled cables - special cable reel with sliding contacts available**

MPP 930-pH/FDO®/Cond-Kit

Multi-parameter probe for the simultaneous measurement of up to three of the following parameters. Dissolved oxygen (optical), pH or ORP, conductivity and turbidity. A built-in pressure sensor supplies the depth reading. Each sensor includes self contained temperature compensation.

Typical applications include limnological studies up to a depth of 100 meters, but also measurements in wells, dump site monitoring and much more.

The Multi 3630 IDS is required for measurement. The probe is available in a kit with sensors.

IDS depth profile measurement

Depth profile measurement with the WTW IDS system: A temperature- and barometric pressure-compensated pressure sensor integrated in the depth sonde combines dissolved oxygen, pH or ORP and conductivity with exact depth indication.

Novel plug head system

No Twisting. One click and the connection to the MPP is closed in a pressure-resistant, tensile-resistant and data-safe manner. With thin and tear-resistant cables in different lengths.

Special cable reel with sliding contacts

Unwind the cable and conveniently read the data on the meter: This is enabled by the optional cable reel with sliding contacts for up to 100m of cable.
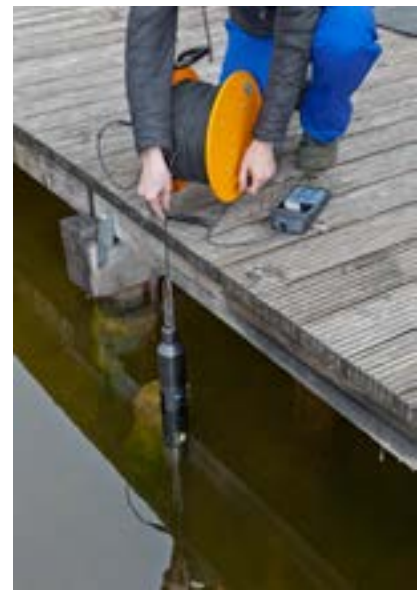
Technical specifications: IDS depth sonde

	MPP 930 IDS
Length	500 mm
Diameter	70 mm
Weight	3.0 kg
Measuring range depth measurement	0.50 to 100 m
Dissolution	0.05 m
Accuracy	± 0.25 m at 100 m
Number of the sensor plug locations	3

Order information: IDS depth sonde

Model	Description	Order no.
MPP 930-pH/FDO®/ Cond-Kit	Digital multi-parameter depth sonde, for Multi 3630 IDS, in the kit with pressure-resistant digital pH, oxygen and conductivity sensors, in a field carrying case including accessories.	401206
For accessories, see price list or www.WTW.com		

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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Digital multi-parameter benchtop meters

inoLab® Multi 9630, 9620 IDS: measure securely

inoLab® Multi 9630

- **Three or two universal measuring channels**
- **Digital sensor recognition**
- **Prepared for IDS wireless modules**

3 year Warranty   IP 43   CE

The inoLab® Multi 9630 IDS and inoLab® Multi 9620 IDS are the new, wireless-ready, high-performance, three-channel and dual-channel digital benchtop meters with a glass-protected color graphic display, high-quality die-cast zinc base and antibacterial keyboard. With these multi channel instruments, several parameters can be measured and documented simultaneously.

The new MultiLab® user enables the assignement of individual user rights for life science and other regulated applications.

Measurement safety

- The digital signal transfer eliminates interference, safely allocates calibration data, simply transmits sensor data
- The intelligent sensor evaluation (QSC) provides information about the actual state of the electrode and therefore increases the operational safety
- Secure wireless connection by clear allocation of sensor and meter

GLP/AQA compliant documentation

- Automatic, digital capture of all sensor data for the clear traceability of the measured values
- Activatable user management with definable user rights for the safe allocation of users, measurement results and sample
- Data output on PC, USB memory stick or printer
- ISE measurement with increment methods

Flexible and high performance

- Any combination of parameters
- Backlit graphic display with CMC, QSC and channel display
- Adapter for analogue pH/ISE/ORP electrodes
- Memory with 10,000 entries

inoLab® Multi 9310 IDS: determine securely

inoLab® Multi 9630

- **One universal measuring channel**
- **Digital sensor recognition**
- **IDS wireless module compatible**

3 year warranty   **IP 43**   **CE**

The Lab 9310 with a digital measuring channel is very suitable to enter the world of digital multi-parameter measurement using IDS sensors. The IDS technology allows optimized measurements and efficient documentation in the simplest manner.

The inoLab® Multi 9310 IDS is compatible with the wireless IDS modules.

GLP/AQA compliant documentation

- Automatic, digital recording of all sensor data for the clear traceability of the measured values
- Activatable user management with definable user rights for the safe allocation of user and measurement result
- Transmission of all data in *.csv format via USB interface to PC; if desired, formatted transfer to Excel (MultiLab® Importer, included in the delivery or as a download).
- Output directly into the meter possible; via optional built-in printer.

Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

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Technical specifications: Digital multi-parameter benchtop meters

	inoLab® Multi 9630 IDS	inoLab® Multi 9620 IDS	inoLab® Multi 9310 IDS
Parameter	pH, mV, O$_2$ (saturation, concentration, partial pressure), conductivity (specific resistance, salinity, TDS) , temperature, turbidity		
Digital/IDS sensors	●	●	●
Universal measuring channels	3	2	1
Analogue pH/ORP and ISE sensors	ADA 94 pH/IDS	ADA 94 pH/IDS	ADA S7/IDS (optional; no ISE measurement possible)
Temperature compensation	All except for ORP	All except for ORP	All except for ORP
Calibration points: **pH measurement** **ISE measurement** **Dissolved oxygen measurement** **Conductivity measurement** **Turbidity measurement**	1–5 2–7 (Adapter necessary) 1 1 3	1–5 2–7 (Adapter necessary) 1 1 3	1–5 – 1 1 3
Calibration timer	1 – 999 days	1 – 999 days	1 – 999 days
Memory capacity	Manual: 500 data sets automatic: 10,000 data sets	Manual: 500 data sets automatic: 10,000 data sets	Manual: 500 data sets automatic: 4,500 data sets
Logger	●	●	●
Interface	USB-A, Mini USB-B	USB-A, Mini USB-B	Mini USB-B
GLP/AQA support	●	●	●
Display	Color graphic	Color graphic	BW graphic
Printer option	External	External	Yes
Miscellaneous	Antibabacterial keypad, QSC, CMC	Antibabacterial keypad, QSC, CMC	CMC, QSC
Power Supply	Universal power supply	Universal power supply	Universal power supply, battery (4 x 1.5 V AA Type)

Order information: Digital multi-parameter benchtop meters

Model	Description	Order no.
inoLab® Multi 9310 SET C	Digital multi-parameter laboratory meter, wireless ready, in set included IDS sensors, electrode SenTix® 940, IDS conductivity cell TetraCon® 925, accessories	1FD35C
inoLab® Multi 9620 SET C	Professional digital multi-parameter benchtop meters, wireless ready. With two universal measuring channels for pH/mV/ISE, dissolved oxygen, turbidity and conductivity, digital IDS pH electrode SenTix® 980, IDS conductivity cell TetraCon® 925, accessories	1FD56C
inoLab® Multi 9630 SET K	Professional digital multi-parameter benchtop meters, wireless ready. With three universal measuring channels for pH/mV/ISE, dissolved oxygen and conductivity, digital IDS pH electrode SenTix® 980, optical IDS dissolved oxygen sensor FDO® 925. IDS conductivity cell TetraCon® 925, accessories	1FD57K
For additional sets, see price list or www.WTW.com		

Benchtop meters for analogue sensors

inoLab® pH/ION 7320 – reliable ion concentration measurement and documentation

The inoLab® pH / ION 7320 is perfectly suited for precision measurement and automatic GLP/AQA compliant documentation in quality laboratories of all industries. Also available with optionally installed printer

inoLab® pH/ION 7320P
(with built-in printer)

Digital multi-parameter portable meters

MultiLine IDS

The robust and field-suitable measuring instruments are waterproof and dust-proof according to IP 67. They have a silicon keypad made of a single cast and can be cleaned easily with a soft brush under a water jet. They support the GLP documentation with meter and sensor data, and with the new MultiLab® User user management, individual user rights can also be assigned. By being prepared for optional wireless measurement, they save space and ensure full freedom of movement.

All IDS portable meters are available in application-specific carrying case kits with sensors and accessories.

Modern communication

Two field-suitable waterproof USB interfaces for connecting memory sticks or selected printers and for data transfer to PC or laptop with MultiLab® Importer (For Multi 3630/3620 IDS).

Technical specifications: Digital multi-parameter portable meters

MultiLine®	Multi 3630 IDS	Multi 3620 IDS	Multi 3510 IDS
Parameter	pH, mV, O$_2$ (saturation, concentration, partial pressure), Conductivity (spec. resistance, salinity, TDS), Temperature, Turbidity. Depth*	pH, mV, O$_2$ (saturation, concentration, partial pressure), Conductivity (spec. resistance, salinity, TDS), Temperature, Turbidity	pH, mV, O$_2$ (saturation, concentration, partial pressure), Conductivity (spec. resistance, salinity, TDS), Temperature, Turbidity
Digital/ IDS sensors	●	●	●
Universal measuring channels	3	2	1
Memory capacity	Manual: 500 data sets Automatic: 10,000 data sets	Manual: 500 data sets Automatic: 10,000 data sets	Manual: 500 data sets Automatic: 4,500 data sets
Data logger	Manual, time-controlled	Manual, time-controlled	Manual, time-controlled
Interface	USB-A, Mini USB-B	USB-A, Mini USB-B	Mini USB-B
Display	Color graphic	Color graphic	Graphic, BW
Power Supply	Power supply with charging function, 4 NiMH batteries (AA type), USB	Power supply with charging function, 4 NiMH batteries (AA type), USB	4 Alkaline batteries, USB
Protection class	IP 67	IP 67	IP 67

* with MPP 930 IDS

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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Multi 3630 IDS: The all-rounder for pH/ORP, conductivity, dissolved oxygen and turbidity

MultiLine® Multi 3630 IDS

- ● **Fail safe measurement due to galvanic isolation of the two inputs**
- ● **Simultaneous proof reading of up to three parameters through brilliant color graphic display**
- ● **Prepared for the use with a MPP IDS depth sonde**

The Multi 3630 IDS with three universal measurement channels works with all WTW IDS pH, ORP, dissolved dissolved oxygen sensors, conductivity cells and turbidity sensors, whether tethered or wireless.

Reliable measurements

- Any combination of equal and different parameters
- Cable lengths up to 100 m for all parameters
- Backlit color graphic display with CMC, QSC and channel display
- Secure wireless connection between sensor and meter

GLP/AQA compliant documentation

- Automatic, digital logging of all sensor data for the clear traceability of the measured values
- Activatable user management with definable user rights for secure provisioning of users, measurement results and samples

Flexible and high performance

- The digital signal transfer eliminates interference, safely allocates calibration data, simply transmits sensor data
- The intelligent sensor evaluation (QSC) provides information about the actual state of the electrode and therefore increases the operational safety
- Memory with 10,000 entries
- Data output on PC, USB memory stick or printer
- Pluggable adapter for analogue pH/ORP electrodes
- Connection of a MPP IDS depth sonde possible

Parameters

Multi
parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software,
Documentation

Multi 3620 IDS: Simultaneous measurement of two parameters

MultiLine® Multi 3620 IDS

Fail safe measurement due to galvanic isolation of the two inputs

Clear display of one or two measurement parameters with bright color display

Simple to operate with clear menu structure

Reliable measurements

- Any combination of available measurement parameters
- Cable lengths up to 100 m for all parameters
- Backlit color graphic display with CMC, QSC and channel display
- Secure wireless connection by clear allocation of sensor and meter

GLP/AQA compliant documentation

- Automatic, digital logging of all sensor data for the clear traceability of the measured values
- Activatable user management with definable user rights for the safe allocation of users, measurement results and sample

Flexible and high performance:

- The digital signal transfer eliminates interference, safely allocates calibration data, simply transmits sensor data
- The intelligent sensor evaluation (QSC) provides information about the actual state of the electrode and therefore increases the operational safety
- Memory with 10,000 entries
- Data output on PC, USB memory stick or printer
- Pluggable adapter for analogue pH/ORP electrodes

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Multi 3510 IDS: Multi-parameter measurement made simple

MultiLine® Multi 3620 IDS

- ● **Sequential multi-parameter measurement**
- ● **Memory for 4500 automatic and 500 manual inputs for data collection in the field**
- ● **Reliable and robust for mobile use**
- ● **Easy-to-read backlit S/W graphic display**

The Multi 3510 IDS is a perfect entry-level meter for IDS multi-parameter measurement. All WTW IDS pH, ORP, dissolved oxygen sensors, conductivity cells and turbidity sensors can be connected to the universal measuring channel, either with cable or with wireless module.
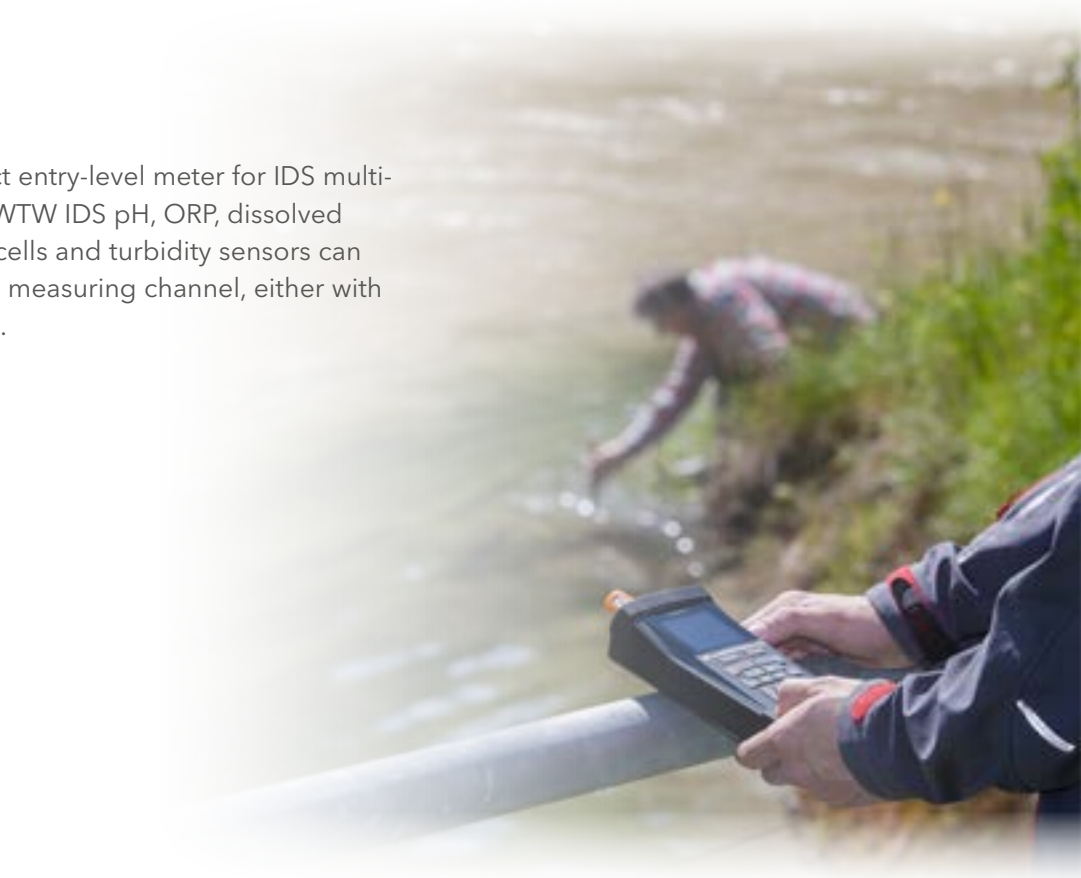
Order information: Digital multi-parameter portable meters

Model	Description	Order no.
Multi 3510 IDS SET 4	Professional multi-parameter portable meter for IDS electrodes, wireless ready in a carrying case kit with optical dissolved oxygen sensor FDO® 925, accessories.	2FD354
Multi 3620 IDS SET C	Professional, digital multi-parameter portable meter for field measurement, with two universal measuring channels, wireless ready, set in a carrying case with IDS sensors: digital pH electrode SenTix® 940, digital conductivity cell TetraCon® 925, accessories	2FD56C
Multi 3630 IDS SET F	Professional, digital multi-parameter portable meter for field measurement, with three universal measuring channels, wireless ready, set in field carrying case with IDS sensors: digital pH electrode SenTix® 940, digital conductivity cell TetraCon® 925, optical dissolved oxygen sensor FDO® 925, accessories	2FD57F
For additional sets, see price list or www.WTW.com		

ProfiLine multi-parameter portable meters for analogue sensors

Profiline is a line of robust and watertight multi-parameter portable meters for analogue sensors. They measure simultaneously from a selection of different parameters with a maximum of 2 sensors.

3 year warranty   IP 67   CE

pH/ION 3310

A portable specialist for pH/mV/ISE measurement. You can find more information in the chapter "Ion-selective measurement".

see page 80

pH/ION 3310

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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Technical specifications: Multi-parameter portable meters for analogue sensors

ProfiLine		pH/Cond 3320 and Multi 3320		
pH measurement	Measurement Range pH	-2.0 … 20.0 ±0.1 pH -2.00 … 20.00 ±0.01 pH -2.000 … 19.999 ±0.005 pH		
	Measurement range mV	± 1200.0 mV ± 0.3 mV ± (2500 ± 1) mV		
	Measurement range ISE	Conc. (mg/l, µmol/l, mg/kg, ppm, %)	0.000 … 9.999 10.00 … 99.99 100.0 … 999.9 1000 … 999999	
	Measurement range temperature	-5.0 … 105.0 °C ± 0.1 °C		
	CMC	Yes		
	Calibration	1-, 2-, 3-, 4-, 5-point calibration WTW Technical, DIN-, NIST- as well as further 22 buffer sets ISE 2 … 7-point calibration, also non-linear		
Conductivity measurement	Measurement range conductivity	0.00 … 1000 mS/cm ± 0.5 % of measured value		
	Measurement range specific resistance	1 Ohm/cm … 199.9 M Ohm/cm (dependent on cell constant)		
	Cell constants	Fixed: $\quad$ 0.01 cm^{-1} Additionally $\quad$ 0.000 … 1.999 µS/cm, K= 0.01 cm^{-1} $\qquad\qquad$ 0.00 … 19.99 µS/cm, K= 0.1 cm^{-1} With calibration: $\quad$ 0.450 to 0.500 cm^{-1} $\qquad\qquad$ 0.800 … 0.880 cm^{-1} Adjustable: $\quad$ 0.090 … 0.110 cm^{-1} $\qquad\qquad$ 0.250… 25.000 cm^{-1}		
	Salinity	0.0 … 70.0 (as per IOT)		
	TDS	1 … 1999 mg/l, 0 to 199.9 g/l		
	Measurement range temperature	-5.0 … 105.0 °C ± 0.1 °C		
	Sensor plug	8 pins		
	Calibration (conductivity)	1-point $\qquad$ 0.01 mol/l KCl 1413 µS/cm at 25°C		
	T_{ref}	20 °C/25 °C		
	Temperature compensation	None, nlF, 0.000 … 10.000 %/K		

Additionally with Multi 3320:

Oxygen measurement	Measurement range dissolved oxygen	Concentration* $\quad$ 0.00 … 20.00 mg/l ± 0,5 % measured value $\qquad\qquad$ 0 … 90 mg/L ± 0,5 % of measured value Saturation * 0.0 … 200.0 % ± 0,5 % of measured value $\qquad\qquad$ 0 … 600 % ± 0.5 of measured value Partial pressure* $\quad$ 0 … 200.0 hPa, $\qquad\qquad$ 0 … 1250 hPa, each ± 0,5% of measured value		
	Measurement range temperature	0.0 … 50.0 °C ± 0.1 °C		
	Calibration	CellOx / DurOx with OxiCal calibration vessels, in addition against external standard		
	Air pressure compensation	Through built-in sensor		

General data

Calibration memory	Retrievable up to 10 calibrations
AutoRead	Can be switched automatically/manually
Display Celsius/Fahrenheit	Yes
Display	LCD graphics -, backlit
Data memory	500 manual, 5000 automatic
Logger	Manual/time-controlled
Waterproof	IP 67
Interface	USB slave
Power Supply	4 x 1.5 V AA or 4 x 1,2 V NiMH battery pack
Permanent operation	Up to 800 h without or 100 h with illumination

* depending on sensor
All values ± one position after decimal point

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Parameters

Multi parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software, Documentation

Multi 3320

ProfiLine Multi 3320

- **Extensive measurement functions for pH, ORP, ISE, conductivity and dissolved oxygen**
- **Built-in memory and data logger for recording measurement series**
- **Backlit graphic display with simultaneous display of the measurement values**

The Multi 3320 measures pH, ORP, ISE conductivity and dissolved oxygen (electrochemical). It is an ideal meter for environmental applications like groundwater and surface water measurement, aquaculture, as well as in a wastewater treatment plant and much more. Also suitable for process applications where dissolved oxygen is important. All analogue WTW pH/ORP electrodes, combined ISE electrodes, conductivity cells and galvanic dissolved oxygen sensors can be connected to the meter.

Clear measurements

- Backlit graphic display with CMC function for pH
- Measure two parameters simultaneously

GLP/AQA compliant documentation

- GLP-supporting data acquisition with date, time, ID number

Flexible and high performance:

- pH, ORP, ISE, conductivity and dissolved oxygen measurement
- Memory with 5,000 entries
- Data output on the PC

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pH/Cond 3320

ProfiLine pH/Cond 3320

Two inputs for the simultaneous measurement of pH/mV/ISE and conductivity

Backlit graphic display for the simultaneous display of the measured values

Perfect for monitoring process applications

The pH/Cond 3320 measures pH, ORP, ISE and conductivity. It is used almost everywhere – from process chemistry via life science, food and beverage to the pharmaceutical industry (measurement of pH and conductivity according to pharmacopoeia). It is a handy and robust meters, even for demanding applications which require documentation.

Reliable measurements

- Backlit graphic display with CMC function for pH
- Measure two parameters simultaneously

GLP/AQA compliant documentation

- GLP-supporting data acquisition with date, time, ID number

Flexible and high performance:

- pH, ORP, ISE and conductivity measurement
- Memory with 5,000 entries
- Data output on the PC

Order information: Multi-parameter portable meters for analogue sensors

Model	Description	Order no.
pH/Cond 3320 SET 2	Professional pH/conductivity meter with 2 inputs, meter in a carrying case with pH electrode SenTix® 41, conductivity cell TetraCon® 325 and accessories	2EA312
Multi 3320 SET 1	Professional pH/dissolved oxygen/conductivity meter with 2 inputs, meter in a field carrying case with pH - electrode SenTix® 41, dissolved oxygen sensor CellOx® 325, conductivity cell TetraCon® 325 and accessories	2FA311
Further sets see price list or www.WTW.com		

Parameters

Multi
parameter

pH

ORP

ISE

Dissolved Oxygen

Conductivity

BOD/Respiration

Photometry

Turbidity

Software,
Documentation

Analogue sensors

pH electrodes

WTW pH electrodes include a wide variety of application-oriented models that cover all aspects of pH measurement.

ORP electrodes

The ORP measurement is a determination of potentials that result from reactions on the metal surface of the electrodes. Each multi-parameter meter with pH function also measures the ORP voltage.

ISE electrodes

Ion-selective measurement is a method to determine concentrations of specific ions in a quantitative manner.

Dissolved oxygen sensors

Dissolved oxygen is an important parameter in biologic and technical processes, for example in corrosion prevention applications. The Multi 3320 has the possibility of electrochemical oxygen measurement.

Conductivity cells

WTW has a large selection of analogue conductivity cells for all applications. Highest mechanical precision in manufacturing ensures unsurpassed quality.