InLab® Sensors

LABO AND CO

InLab® Sensors

- pH
- ORP
- Conductivity
- Ion Concentration
- Dissolved Oxygen

Origin of Precision

Proven Sensor Technology for Safe Results

METTLER TOLEDO

InLab® Sensors
Developed for Your Applications

The manufacturing of high quality sensors with outstanding performance not only requires technical skills and expertise but also a profound understanding of the various customer applications and their specific requirements. METTLER TOLEDO has built up an enormous treasure trove of experience and knowledge over the last decades, which has resulted in a complete sensor portfolio that supports any of your applications.

Performance to Trust

Measurements have to be fast, precise and reproducible. Tried and trusted technologies combined with state-of-the-art production processes guarantee highest performance for every InLab sensor, providing reliable results at any time.

Easy to Use

All InLab sensors are shipped ready to use. Everything you need to measure comes together with the sensor. Your work in the lab will be simplified by the spill-free wetting cap, the automatic sensor recognition of ISM sensors by the meter and the application-specificity of the sensor you selected.

Built to Last

The thought-through InLab sensor construction as well as the high-quality materials used for manufacturing, guarantee high robustness even in harsh applications. The versatile sensor portfolio ensures the perfectly suited sensor for every application, a match that greatly lengthens the lifetime of the products.

Quality is more than a promise for us. To guarantee it, we test every single sensor. Only sensors which successfully pass the strict final product inspection receive an individual quality certificate and are ready for delivery.

Precision is our Tradition – Since 1948

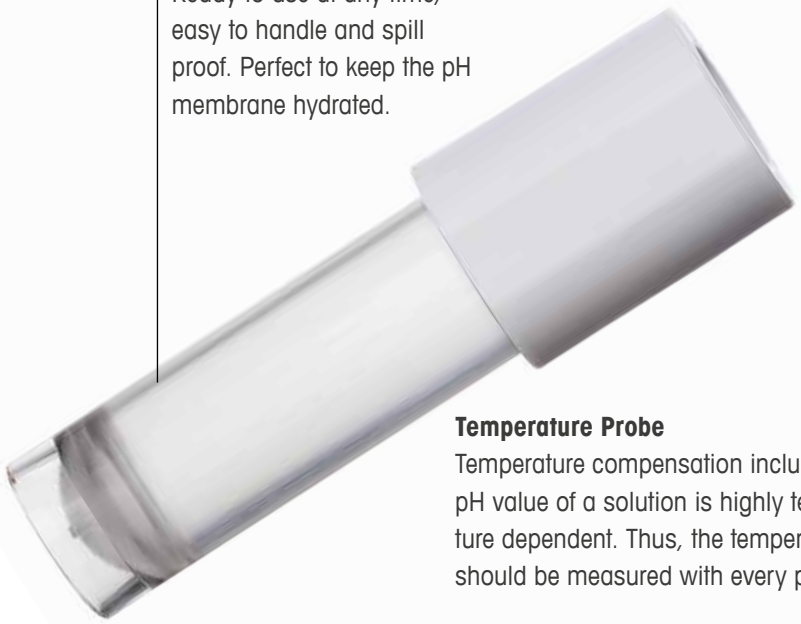
InLab® Sensor Technology
Proven Reliability

The variety of electrochemical sensors is as diverse as the applications they are used for. Only the right combination of high-quality materials, tried-and-trusted technologies, and the shape of the membrane make a sensor perfectly suited for a specific application.

Membrane Glass
The membrane is the pH sensing part of the sensor. Its shape and glass composition are optimized to assure best results for different applications.

HA - High alkali glass with low alkali errors for high pH values and high temperatures.
U - Universal glass for standard applications and small membranes.
A41 glass - particularly resistant to chemicals, suitable for high temperatures.
LoT - Low temperature glass with low resistance. Suitable for samples with low temperatures and low ion concentrations.
HF - Hydrofluoric acid resistant glass for samples containing hydrofluoric acid (up to 1 g/L).

Wetting Cap
Ready to use at any time, easy to handle and spill proof. Perfect to keep the pH membrane hydrated.



Temperature Probe
Temperature compensation included! The pH value of a solution is highly temperature dependent. Thus, the temperature should be measured with every pH value.

Junction
The junction is the connection between the reference electrolyte and the sample. Different junctions exists:

Ceramic Junctions
For general applications

Sleeve Junctions
For fast results, best in dirty samples

Open Junctions
For easy cleaning and clog-free measurement

SafeLock™
For refillable sensors: easy to open for measurement, perfectly sealed for storage and transport

Reference Electrolyte
Liquid electrolytes are typically used for general applications and provide fast results. Polymer or gel electrolytes stand for low maintenance.

Shaft Material
The sensor robustness is dependent on the right shaft material. Glass is highly chemically resistant and allows for measurements at high temeratures. When mechanical robustness is key, plastic type is the preferred material.

Reference System
Provides a stable potential against which the measuring electrode can be compared.

ARGENTHAL™ with silver ion trap
for silver ion free electrolyte. No clogging of the junction through sulfide or protein containing samples or TRIS buffers.

SteadyForce™
pressurized (3 bar) electrolyte ensures electrolyte flow even in viscous samples and guarantees highly reproducible results.

ISM

Intelligent Sensor Management
Every ISM marked sensor offers data security and easy handling.

Secure and efficient
Calibration data and Sensor ID are automatically transferred to the meter.

Always up to date
New calibration data are stored in the sensor.

Backup certificate guaranteed
Initial factory calibration is stored in the sensor.

Conclusive calibration history
The last five calibrations are stored in the sensor.

Easy lifetime monitoring
The maximum temperature that the sensor has been exposed to is monitored automatically.

Time is Precious
Sensors for Fast Results

Liquid filled electrodes are reliable workhorses, constructed for efficient pH measurements in daily laboratory use of a wide application range. For more complex sample matrices like emulsions or biological media, electrodes with a sleeve junction are recommended.

Routine | Routine Pro | Routine Pro-ISM | Max Pro-ISM | Science | Science Pro-ISM | Versatile Pro

Electroplating is a common technique used to coat metals in order to add desired properties to them. Strong acids and bases are needed for this process and the robust HA glass of the InLab Routine Pro-ISM is ideal for this application as it covers the whole pH range with an extremely low alkali error.

InLab®	Routine	Routine Pro	Routine Pro-ISM	Max Pro-ISM	Science	Science Pro-ISM	Versatile Pro
Order number	51343050	51343054	51344055	30248830	51343070	51344072	51343031
pH range	0…14	0…14	0…14	0…14	0…12	0…12	0…14
Temperature probe		NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ		NTC 30 kΩ	NTC 30 kΩ
Type of membrane glass	HA	HA	HA	HA	A41	A41	U
Membrane resistance (25°C)	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 250 MΩ
Type of junction	Ceramic	Ceramic	Ceramic	Immovable glass sleeve	Movable glass sleeve	Movable glass sleeve	Ceramic
Bridge electrolyte						3 mol/L KCl	
Cable and connection	S7	MultiPin™	MultiPin™	MultiPin™	S7	MultiPin™	1.2 m cable; BNC/RCA
Shaft material	Glass	Glass	Glass	Glass	Glass	Glass	Polysulfone
Shaft length	120mm	120mm	120mm	120mm	120mm	170mm	120mm
InLab® Routine Pt1000	The InLab® Routine Pro is also available with a Pt1000 temperature probe: Order number: 51343056						
Common specification	Type of electrode: pH-combination / Reference system: ARGENTHAL™ with Ag^+-trap / Reference electrolyte: 3 mol/L KCl / Temperature range: 0…100 °C / Shaft diameter: 12 mm / Storage: 3 mol/L KCl						

Always Ready
Maintenance Free Sensors

Well-equipped for challenging tasks. The highly robust PEEK shaft in combination with the open junction makes the InLab Expert both resilient and easy to handle. Its solid reference electrolyte requires no refilling and is always ready for use. If highest performance is expected, the InLab Power is the first choice.

Expert | Expert Pro-ISM | Expert-DIN | Power | Power Pro-ISM | Easy

The InLab Power-Pro-ISM is simply brilliant. The SteadyForce™ reference system is under over-pressure. This guarantees highest reproducibility of pH measurements even in challenging samples like polymeric dispersions which are used in the production of plastics.

InLab®	Expert	Expert Pro-ISM	Expert DIN	Power	Power Pro-ISM	Easy
Order number	51343100	30014096	51343103	51343110	51344211	51343010
Order no. non ISM version		51343101				
pH range	0…14	0…14	0…14	0…12	0…12	0…14
Temperature range	0…100 °C	0…100 °C	0…100 °C	0…130 °C	0…130 °C	0…80 °C
Temperature probe		NTC 30 kΩ	Pt1000		NTC 30 kΩ	
Type of membrane glass	U	U	U	A41	A41	U
Membrane resistance (25°C)	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ	< 250 MΩ
Type of junction	Open junctions	Open junctions	Open junctions	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	SteadyForce™	SteadyForce™	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	XEROLYT® Polymer	XEROLYT® Polymer	XEROLYT® Polymer	DPA-Gel	DPA-Gel	Gel
Cable and connection	S7	1.2 m cable; BNC/RCA (Cinch)	1.2 m cable; DIN 19262/4 mm	S7	MultiPin™	S7
Shaft material	PEEK	PEEK	PEEK	Glass	Glass	Polysulfone
Shaft length	120 mm	120 mm	120 mm	120 mm	170 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Storage	FRISCOLYT-B®	FRISCOLYT-B®	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl
InLab® Expert NTC30	The InLab® Expert Pro is also available with a MultiPin™ connector: Order number: 51343104					
InLab® Expert Pt1000	The InLab® Expert Pro is also available with a MultiPin™ connector and a Pt1000 temparature probe: Order number: 51343105					
InLab® Easy BNC	The InLab® Easy is also available with a 1.2 m cable (BNC): Order number: 51343011					
Common specification	Type of electrode: pH-combination / Shaft diameter: 12 mm					

Nothing is Impossible
Sensors for Small Volumes

The more precious or limited the sample, the greater the challenge to use it for analysis. The narrow sensor shaft of micro pH sensors fits in nearly every sample container and enables measurements of sample volumes down to the lower µL ranges.

Ultra-Micro-ISM | Micro | Micro Pro-ISM | Semi-Micro | Nano | NMR | Flex-Micro

The InLab Ultra-Micro-ISM allows pH measurements of sample volumes down to 15 µL. Key for any lab working with expensive or precious micro samples.

InLab®	Ultra-Micro-ISM	Micro	Micro Pro-ISM	Semi-Micro	Nano	NMR	Flex-Micro
Order number	30244732	51343160	51344163	51343165	30092990	59904572	51343164
pH range	1…11	0…14	0…14	0…12	1…14	0…14	0…14
Temperature range	0…80 °C	0…80 °C	0…100 °C	0…100 °C	0…80 °C	0…80 °C	0…80 °C
Temperature probe			NTC 30 kΩ				
Type of membrane glass	LoT	U	U	A41	U	U	U
Membrane resistance (25°C)	< 700 MΩ	< 1000 MΩ	< 300 MΩ	< 600 MΩ	< 1000 MΩ	< 1000 MΩ	< 600 MΩ
Type of junction	Ceramic	Ceramic	Ceramic	Open junction	Ceramic	Ceramic	Porous PTFE
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	AR GENTHAL™ with Ag^+-trap	Ag/AgCl	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	XEROLYT®EXTRA Polymer	3 mol/L KCl AgCl saturated	3 mol/L KCl	Gel
Cable and connection	MultiPin™	S7	MultiPin™	S7	1.0 m cable; BNC	S7	1.0 m cable; BNC
Shaft material	Glass	Glass	Glass	Glass	Glass	Glass	Epoxy
Shaft length	40 mm	60 mm	130 mm	100 mm	30 mm	200 mm	180 mm
Shaft diameter	3 mm	3 mm	5 mm	6 mm	1.7 mm	3 mm	6 mm
Minimum sample volume	15 µL	45 µL	100 µL	100 µL	5 µL	45 µL	500 µL
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	FRISCOLYT-B®		3 mol/L KCl	3 mol/L KCl
Common specification	Type of electrode: pH-combination						

Accept the Challenge
Sensors for Solid and Viscous Samples

The measurement of solid or semi-solid samples is challenging and requires sensors that are robust, ensure proper electrolyte flow and are easy to clean. Sensors with these properties are often requested for food or cosmetic applications.

Solids | Solids Pro-ISM | Viscous | Viscous Pro-ISM | Diary | Surface | Surface Pro-ISM

The pH value is an indicator for the ripeness of fruits. Thanks to the puncture electrode InLab Solids it is possible to measure where it counts: directly in the fruit. Strawberries taste best at a pH of 3.5.

InLab®	Solids	Solids Pro-ISM	Viscous	Viscous Pro-ISM	Dairy	Surface	Surface Pro-ISM
Order number	51343153	51344155	51343150	51343151	59904591	51343157	30249570
pH range	1…11	1…11	0…14	0…14	0…12	1…11	1…11
Temperature range	0…80 °C	0…80 °C	0…130 °C	0…130 °C	0…100 °C	0…50 °C	0…50 °C
Temperature probe		NTC 30 kΩ		NTC 30 kΩ			NTC 30 kΩ
Type of membrane glass	LoT	LoT	HA	HA	A41	LoT	LoT
Membrane resistance (25°C)	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 800 MΩ	< 800 MΩ
Type of junction	Open junction	Open junction	Ceramic	Ceramic	Triple ceramic	Cemaric ring	Cemaric ring
Reference system	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	SteadyForce™	SteadyForce™	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte	XEROLYT®EXTRA Polymer	XEROLYT®EXTRA Polymer	FRYSCOLYT-C®	FRYSCOLYT-C®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Cable and connection	S7	MultiPin™	S7	MultiPin™	S7	S7	MultiPin™
Shaft length	25 mm	25 mm	40 mm	40 mm	120 mm	120 mm	120 mm
Shaft diameter	6 mm	6 mm	6 mm	6 mm	12 mm	12 mm	12 mm
Storage	FRYSCOLYT-B®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl
Common specification	Type of electrode: pH-combination / Shaft material: Glass						

Pure Performance
Low Temperatures and Ionic Strenght

A special membrane glass and a large membrane surface are typical characteristics for sensors suited for measuring in samples at low temperatures or with low ion concentrations. One of the key areas of application is the measurement of pure water at various levels of purity.

Pure | Pure Pro-ISM | Cool | Cool Pro-ISM | Water Go | Hydroflouric

Pure water is a key ingredient in every pharmaceutical production process. The InLab Pure Pro-ISM convinces with a strong performance in weak ionic strength samples.

InLab®	Pure	Pure Pro-ISM	Cool	Cool Pro-ISM	Water Go	Hydrofluoric
Order number	30248112	51344172	51343174	30247850	30253098	51343176
pH range	1…11	1…11	1…11	1…11	1…11	1…11
Temperature range	0…80 °C	0…80 °C	-30…80 °C	-30…80 °C	0…80 °C	0…100 °C
Temperature probe		NTC 30 kΩ		NTC 30 kΩ	NTC 30 kΩ	
Type of membrane glass	LoT	LoT	LoT	LoT	LoT	HF
Membrane resistance (25°C)	< 50 MΩ	< 50 MΩ	< 50 MΩ	< 50 MΩ	< 150 MΩ	< 100 MΩ
Type of junction	Immovable glass sleeve	Immovable glass sleeve	Immovable glass sleeve	Immovable glass sleeve	Porous PTFE	Ceramic
Reference electrolyte	FRYSCOLYT-B®	3 mol/L KCl	FRYSCOLYT-B®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Bridge electrolyte		1 mol/L KCl				
Cable and connection	S7	MultiPin™	S7	MultiPin™	1.8 m cable; BNC/RCA (Cinch)	S7
Shaft material	Glass	Glass	Glass	Glass	Polysulfone	Glass
Shaft length	120 mm	170 mm	120 mm	120 mm	120 mm	120 mm
Storage	FRYSCOLYT-B®	3 mol/L KCl	FRYSCOLYT-B®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Common specification	Type of electrode: pH-combination / Reference system: Reference system: ARGENTHAL™ with Ag^+-trap / Shaft diameter: 12 mm					

Reach New Depths
Long Sensors

The deeper the container, the more difficult it gets to reach the sample. Sensors with especially long and robust shafts are required for proper pH measurements in very deep or narrow containers.

Reach 225 | Reach Pro-225 | Reach Pt1000-225 | Reach 425 | Reach Pro-425 | Reach Pt1000-425 | Semi-Micro-L

From the chalk board, to experimental reactions, to ultimately the final formulation. The extra-long InLab Reach sensors are a solid companion during the whole scale-up process in the pilot production.

InLab®	Reach 225	Reach Pro-225	Reach Pt1000-225	Reach 425	Reach Pro-425	Reach Pt1000-425	Semi-Micro-L
Order number	30244733	30248826	30248828	30248120	51343061	51343062	51343161
pH range	0…14	0…14	0…14	0…14	0…14	0…14	0…14
Temperature range	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C
Temperature probe		NTC 30 kΩ	Pt1000		NTC 30 kΩ	Pt1000	
Type of membrane glass	HA	HA	HA	HA	HA	HA	U
Membrane resistance (25°C)	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 300 MΩ
Cable and connection	S7	MultiPin™	MultiPin™	S7	MultiPin™	MultiPin™	S7
Shaft length	225 mm	225 mm	225 mm	425 mm	425 mm	425 mm	230 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	6 mm
Common specification	Type of electrode: pH-combination / Type of junction: Ceramic / Reference electrolyte: 3 mol/L KCl / Shaft material: Glass / Storage: 3 mol/L KCl						

Extended Possibilities
Sensor Specialists

Special applications require special technologies. The digital InLab Smart Pro-ISM sensor provides helpful sensor diagnostic functions for increased system uptime. For inline measurements the InLab Flow together with the Flow-through cell 611 is the best choice.

Smart Pro-ISM

Flow

Flow-through cell 611

InLab®	Smart Pro-ISM	Flow	Flow-through cell 611
Order number	30027775	59902917	59904354
Type of electrode	digital pH combination	pH combination	Flow-thourgh cell for Inlab® Flow
pH range	0…14	0…11	
Temperature range	0…130 °C	0…80 °C	
Temperature probe	NTC 30 kΩ		
Type of membrane glass	HA	LoT	
Membrane resistance (25°C)	< 600 MΩ	< 250 MΩ	
Type of junction	Ceramic	Double ceramic	
Reference system	SteadyForce™	SteadyForce™	
Reference electrolyte	DPA-Gel	DPA-Gel	
Cable and connection	K8SD	S7	
Shaft material	Glass	Glass	
Shaft length	120 mm	40 mm	
Shaft diameter	12 mm	7 mm	
Storage	3 mol/L KCl	3 mol/L KCl	

Useful Helpers
pH Half-Cells and Reference Electrodes

In some cases it is advisable to use a separate pH half-cell and reference electrode instead of a combined pH sensor. pH half-cells are recommended for applications in which the service life of the pH electrode is significantly less than that of the reference electrode, typically in harsh, aggressive samples.

Mono | Mono Plus | Reference | Reference Plus | Reference Flow

InLab®	Mono	Mono Plus	Reference	Reference Plus	Reference Flow
Order number	51343195	51343196	51343190	51343191	51343192
Type of electrode	pH half-cell	pH half-cell	reference electrode	reference electrode	reference electrode
pH range	0…14	0…12			
Temperature range	0…100 °C	0…130 °C	0…100 °C	0…60 °C	0…130 °C
Type of membrane glass	HA	A41 thick-walled			
Membrane resistance (25°C)	< 600 MΩ	< 700 MΩ			
Type of junction			Ceramic	Moveable PTFE-sleeve	Triple ceramic
Reference system			ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap	ARGENTHAL™ with Ag^+-trap
Reference electrolyte			3 mol/L KCl	Gel	3 mol/L KCl
Bridge electrolyte				3 mol/L KCl	
Storage	3 mol/L KCl	3 mol/L KCl			
Common specification	Shaft material: Glass / Cable and connections : S7 / Shaft length: 120 mm / Shaft diameter: 12 mm				

High Potential
ORP Electrodes

Sensors that measure ORP (oxidation reduction potential) have to cope with similar challenges as pH sensors. Thus, the correct combination of reference system, junction, and shape are of equal importance for successful ORP measurements.

Redox

Redox-L

Redox Flow

Redox Micro

Redox Au

Redox Ag

Fluffy bread with a crispy crust requires a well-controlled baking process. The InLab Redox allows bakeries to control the fermentation process of dough in an easy and efficient way.

InLab®	Redox	Redox-L	Redox Flow	Redox Micro	Redox Au	Redox Ag
Order number	51343200	51343202	51343201	51343203	51343204	51343205
Temperature range	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C	0…100 °C
Type of junction	Ceramic	Ceramic	Moveable glass sleeve	Ceramic	Ceramic	Ceramic
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KNO_3
Shaft length	120 mm	170 mm	120 mm	100 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	6 mm	12 mm	12 mm
Metal	Platinum ring	Platinum ring	Platinum ring	Platinum ring	Gold ring	Silver ring
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO_3
InLab® Redox Pt805	Metal half-cell with platinum ring: Order number 59904377					
InLab® Redox Ag805	Metal half-cell with silver ring: Order number 59904391					
InLab® Redox Ag850	Metal half-cell with silver tip: Order number 59904408					
Common specification	Reference system: ARGENTHAL™ with Ag^+-trap / Cable and connections: S7 / Shaft material: Glass					

Ions in Motion
Conductivity Probes

InLab conductivity probes with 2-pole cells provide the highest accuracy at low conductivity levels. Probes with 4-prole cells display a great linearity over a large conductivity range and are best suited for mid to high conductivity samples.

731-ISM 741-ISM Trace 710 720 751-4mm 752-6mm

Ultrapure water is extensively used for the production of microelectronics and semiconductors. Its purity must be guaranteed and regularly checked. This is exactly the application for which the InLab 742-ISM was made for.

InLab®	731-ISM	741-ISM	Trace	710	720	751-4mm	752-6mm
Order number	30014092	30014094	30014097	51302256	51302255	51344030	51344031
Order no. non ISM version	51344020	51344024					
Measuring range	0.01…1000 mS/cm	0.001…500 µS/cm	0.0001…1000 µS/cm	0.01…500 mS/cm	0.1…500 µS/cm	0.01…100 mS/cm	0.01…112 mS/cm
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0…100 °C	0…100 °C
Temperature probe	NTC 30 kΩ	NTC 30 kΩ	Pt1000	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ
Shaft material	Epoxy	Stainless steel	Titanium	Glass	Glass	Glass	Glass
Shaft length	120 mm	120 mm	67 mm	120 mm	120 mm	120 mm	180 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	4 mm	6 mm
Cell constant	0.57 cm^{-1}	0.105 cm^{-1}	0.01 cm^{-1}	0.80 cm^{-1}	0.06 cm^{-1}	1.0 cm^{-1}	1.0 cm^{-1}
Cell type	4 graphite poles	2 steel poles	2 titanium poles	4 platinum poles	2 platinum poles	2 platinum poles	2 platinum poles
InLab® 731-2m	The InLab® 731 is also available with a 2 m cable: Order number 51344022, Order number ISM 30014093						
InLab® 741-5m	The Inlab® 741 is also available with a 5 m cable: Order number 51344026						
Kit InLab® Trace & Flow-cell	Kit with InLab® Trace and flow cell: Order number 30014099						
InLab® 725	The InLab® 720 is also available with a cell constant of 0.1 cm^{-1}: Order number 30014160						
Common specification	Type of electrode: Conductivity cell						

Everywhere you Measure
Sensors for Mobile Applications

Portable meters are often used in harsh environments, such as in near-process or outdoor areas. Sensors for mobile use have to be robust and IP67 waterproof, and are, thus, equipped with fixed cables.

Expert Go-ISM | Routine Go-ISM | 738-ISM | 742-ISM | 605-ISM | OptiOx

The measuring of complex samples like suspended soil is child's play for the InLab Expert Go-ISM. Thanks to the open junction, there is nothing which can contaminate or falsify results.

		pH			Conductivity		Dissolved oxygen	
InLab®		**Expert Go-ISM**	**Routine Go-ISM**	**Solids Go-ISM**	**738-ISM**	**742-ISM**	**605-ISM**	**OptiOx**
Order number ISM version	**1.8 m cable**	51344102	30248832	51343156	51344110	51344116	51344611	51344621
	5 m cable	51344103			51344112	51344118	51344612	51344622
	10 m cable	51344104			51344114		51344613	51344623
Order number non ISM version	**1.8 m cable**	51340288			51344120	51344126	51340291	
Measuring range		0…14 pH	0…14 pH	0…11 pH	0.01…1000 mS/cm	0.001…500 µS/cm	0…200%, 0…20 mg/L	0…500%, 0…50 mg/L
Temperature range		0…100 °C	0…100 °C	0…80 °C	0…100 °C	0…100 °C	0…60 °C	0…50 °C
Temperature probe		NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 22 kΩ	NTC 30 kΩ
Membrane glass / detection		U	HA	LoT			Polargraphic	Optical
Membrane resistance (25 °C)		< 250 MΩ	< 600 MΩ	< 250 MΩ				
Type of junction / Cell type		Open junction	Ceramic	Open junction	4 graphite poles	2 steel poles		
Reference electrolyte		XEROLYT® Polymer	3 mol/L KCl	XEROLYT® EXTRA Polymer				
Cell constant					0.57 cm^{-1}	0.105 cm^{-1}		
Shaft material		PEEK	Glass	Glass	Epoxy	Stainless steel	PPS	PC / ABS
Shaft lenght		120 mm	120 mm	25 mm	120 mm	120 mm	120 mm	65 mm
Shaft diameter		12 mm	12 mm	6 mm	12 mm	12 mm	12 mm	16 mm
Storage		FRISCOLYT-B®	3 mol/L KCl	FRISCOLYT-B®	dry	dry	dry	dry
Connections		Fixed cable: BNC / RCA (Cinch)			Fixed cable: LTW	Fixed cable: LTW	Fixed cable: BNC / RCA	Fixed cable: Mini-LTW
Common specifications		IP67						

Catch Them All
Combined Ion-Selective Electrode

As various as the range of different ions, as various is the selection of ion-selective electrodes (ISE). The special Click & Clear™ junction allows for an optimal contact of the electrolyte solution and the sample. With the dedicated solutions the sample can be optimally prepared for successful measurement of ion concentration.

perfectION™ sensors

perfectION™ comb Na^+

Measuring ion	perfectION™	Order number electrode	Cable and connections	Measuring range	Temperature range	Optimal pH range	Type of membrane	Reference electrolyte	Order no. membrane module	Order no. ISA solution
Ag^+/S^{2-}	comb Ag^+/S^{2-}	51344700	1.2 m; BNC	10≤…1 mol/L Ag^+: 0.01…108000 mg/L S^{2-}: 0.003…32000 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte B 51344751		Ag^+: 51344760 S^{2-}: see manual
		51344800	1.2 m; Lemo							
Ca^{2+}	comb Ca^{2+}	51344703	1.2 m; BNC	$5 * 10^{-7}$…1 mol/L 0.02…40100 mg/L	0…40 °C	2.5…11	Polymer	Ion Electrolyte A 51344750	51344850	51344761
		51344803	1.2 m; Lemo							
Cl^-	comb Cl^-	51344706	1.2 m; BNC	$5 * 10^{-5}$…1 mol/L 1.8…35500 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte B 51344751		51344760
		51344806	1.2 m; Lemo							
CN^-	comb CN^-	51344709	1.2 m; BNC	$8 * 10^{-6}$…10^{-2} mol/L 0.2…260 mg/L	0…80 °C	10…14	Solid state	Ion Electrolyte B 51344751		10 mol/L NaOH
		51344809	1.2 m; Lemo							
Cu^{2+}	comb Cu^{2+}	51344712	1.2 m; BNC	10^{-8}…0.1 mol/L $6.4 * 10^{-4}$…6354 mg/L	0…80 °C	2…12	Solid state	Ion Electrolyte D 51344753		51344760
		51344812	1.2 m; Lemo							
F^-	comb F^-	51344715	1.2 m; BNC	10^{-6} mol/L…saturated 0.02 mg/L…saturated	0…80 °C	4.5…5.5	Solid state	Ion Electrolyte A 51344750		51344765
		51344815	1.2 m; Lemo							

The sodium chloride content of ketchup can be easily determine cost-efficiently with the perfectION™ Cl^- electrode. The ingenious Click&Clear junction makes cleaning the sensor fast and easy.

Measuring ion	perfectION™	Order number electrode	Cable and connections	Measuring range	Temperature range	Optimal pH range	Type of membrane	Reference electrolyte	Order no. membrane module	Order no. ISA solution
I^-	comb I^-	51344718 51344818	1.2 m; BNC 1.2 m; Lemo	$5 * 10^{-8}$…1 mol/L 0.005…127000 mg/L	0…80 °C	0…12	Solid state	Ion Electrolyte D 51344753		51344760
K^+	comb K^+	51344721 51344821	1.2 m; BNC 1.2 m; Lemo	10^{-6}…1 mol/L 0.04…39000 mg/L	0…40 °C	2.5…11	Polymer	Ion Electrolyte E 51344754	51344851	51344762
[1] Na^+	comb Na^+	51344724	S7	10^{-7}…1 mol/L 0.002…23000 mg/L	0…80 °C	8…11	Na^+-Glass	3 mol/L KCl 51350072		NH_4Cl / NH_4OH
NO_3^-	comb NO_3^-	51344727 51344827	1.2 m; BNC 1.2 m; Lemo	$7 * 10^{-6}$…1 mol/L NO_3- 0.1…14000 mg/L NO_3-as N	0…40 °C	2.5…11	Polymer	Ion Electrolyte F 51344755	51344852	51344763
Pb^{2+}	comb Pb^{2+}	51344730 51344830	1.2 m; BNC 1.2 m; Lemo	10^{-6}…0.1 mol/L 0.2…20700 mg/L	0…80 °C	4…7	Solid state	Ion Electrolyte B 51344751		5 mol/L $NaClO_4$
Common specifications:		ion-selective electrode (ISE) with built-in reference, Type of junction: Click & Clear™, Shaft material: Epoxy [1] exception: perfectION™ comb Na^+: S7 screw cap, ceramic diaphragm, ARGENTHAL™, Shaft material: Glass								

Tried and Trusted
Ion-Selective Half-Cells

Ion-selective half-cells are very flexible in application. They consist of a universal shaft and an ion-specific membrane module that can be exchanged to measure different kinds of ions. Membrane modules are available in membrane kits, including the correct electrolyte solution. Half-cells require the use of a separate reference electrode.

DX sensors

DX223-Na^+

Measuring ion	Designation	Order number electrode	Measuring range	Temperature range	Optimal pH range	Type of membrane	Shaft material	Order no. membrane kit	Order no. electrolyte	Electrolyte for reference electrode	ISA solution
Ba^{2+}	**DX337-Ba^{2+}**	51107674	10^0…4*10^{-7} mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107688	51107892	3 mol/L KCl	1 mol/L $Tris_2$ HCl
BF_4^-	**DX287-BF_4^-**	51107676	10^0…3*10^{-7} mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107690	51107890	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Br^-	**DX280-Br^-**	51340300	10^0…1*10^{-6} mol/L	0...80 °C	2...13	Solid state	POM	51340006	51340029	1 mol/L KNO_3	1 mol/L KNO_3
Ca^{2+}	**DX240-Ca^{2+}**	51340600	10^0…1*10^{-6} mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340009	51340032	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Cd^{2+}	**DX312-Cd^{2+}**	51107672	10^0…1*10^{-6} mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107686	51107891	1 mol/L KNO_3	1 mol/L KNO_3
Cl^-	**DX235-Cl^-**	51340400	10^0…2*10^{-5} mol/L	0...80 °C	2...13	Solid state	POM	51340007	51340030	1 mol/L KNO_3	1 mol/L KNO_3
CN^-	**DX226-CN^-**	51107681	10^0…2*10^{-6} mol/L	0...80 °C	4...13	Solid state	POM	51107695	51107893	1 mol/L KNO_3	10 mol/L NaOH
Cu^{2+}	**DX264-Cu^{2+}**	51107678	10^0…5*10^{-7} mol/L	0...80 °C	2...8	Solid state	POM	51107692	51107889	1 mol/L KNO_3	1 mol/L KNO_3
F^-	**DX219-F^-**	51340500	10^0…5*10^{-7} mol/L	0...80 °C	4...10	Solid state	POM	51340008	51340031	3 mol/L KCl	TISAB III

Fluoride is an essential ingredient in various oral hygiene products and the concentration must be controlled properly. Thanks to the DX219-F^- this is possible without expensive analytical equipment.

Measuring ion	Designation	Order number electrode	Measuring range	Temperature range	Optimal pH range	Type of membrane	Shaft material	Order no. membrane kit	Order no. electrolyte	Electrolyte for reference electrode	ISA solution
I^-	DX327-I^-	51107680	10^0…$2*10^{-8}$ mol/L	0...80 °C	1...13	Solid state	POM	51107694	51107898	1 mol/L KNO_3	1 mol/L KNO_3
K^+	DX239-K^+	51340700	10^0…$1*10^{-6}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340010	51340033	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Li^+	DX207-Li^+	51107673	10^0…$1*10^{-6}$ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51107687	51107881	3 mol/L KCL	0.5 mol/L $MgSO_4$
Na^+	DX223-Na^+	51340263	10^0…$1*10^{-7}$ mol/L	0...80 °C	8...11	Na Glass	Glass			0.1 mol/L NH_4Cl	NH_4Cl / NH_4OH
NH_4^+	DX218-NH_4^+	51340900	10^0…$4*10^{-7}$ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51340012	51340035	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
NO_3^-	DX262-NO_3^-	51340800	10^0…$3*10^{-5}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340011	51340034	2 mol/L $MgSO_4$	0.5 mol/L $MgSO_4$
Pb^{2+}	DX407-Pb^{2+}	51107873	10^0...$3*10^{-6}$ mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107874	51107875	1 mol/L KNO_3	1 mol/L KNO_3
S^{2-}/Ag^+	DX232-S^{2-}	51107675	10^0…$1*10^{-8}$ mol/L	0...80 °C	4...13	Solid state	POM	51107689	51107894	1 mol/L KNO_3	10 mol/L NaOH
SCN^-	DX258-SCN^-	51107870	10^0…$2*10^{-6}$ mol/L	0...80 °C	2...10	Solid state	POM	51107871	51107872	1 mol/L KNO_3	1 mol/L KNO_3
Common specifications		Type of electrode: ion-selective half-cell; Cable and connections: S7									

Amazing Solutions
For Calibration and Care

Any pH measurement is only as accurate as the buffer solution used for calibration purposes. METTLER TOLEDO buffer solutions are traceable to primary standards and come with a quality inspection certificate, which guarantees the stated values and traceability.

Find detailed information on
www.mt.com/buffer

	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
Technical pH buffer solutions			
2.00	51350002	51350016	30111134
4.01	51350004	51350018	51302069
7.00	51350006	51350020	51302047
9.21	51350008	51350022	51302070
10.00	51350010	51350024	51302079
11.00	51350012	51350026	30111135
Rainbow bottles I (4.01/7.00/9.21)		30095312	
Rainbow bottles II (4.01/7.00/10.00)		30095313	
Rainbow sachets I (4.01/7.00/9.21)			51302068
Rainbow sachets II (4.01/7.00/10.01)			51302080
NIST/DIN pH buffer solutions			
4.006	51350052		30111136
6.865	51350054		30111137
9.180	51350056		30111138
10.012	51350058		30111139
Certified pH buffer solutions			
4.01	51350032	51350042	
7.00	51350034	51350044	
9.21	51350036	51350046	
10.00	51350038	51350048	
Redox buffer solutions (E (Ag/AgCl) at 25 °C)			
220 mV, pH 7 (U_H = 427 mV)	51350060	51350062	
468 mV, pH 0.1 (U_H = 675 mV)			51350064 (6 x 30 mL)

	Order number 25 mL	Order number 250 mL	Order number 6 x 250 mL
Electrolytes for reference electrodes			
KCl-solution 3 mol/L	51343180	51350072	51350080
KCl-solution 3 mol/L, AgCl saturated	51343184	51350074	51350082
FRISCOLYT-B®, for media with organic compounds	51343185	51350076	51350084
LiCl solution 1 mol/L in ethanol, for non-aqueous media	51350088 (6 x 30 mL)		
Maintenance solutions			
InLab storage solution		30111142	
Pepsin-HCl for cleaning junctions with protein contamination.		51350100	
Thiourea solution for cleaning junctions with silver sulfide contamination.		51350102	
Reactivation solution for regeneration of glass electrodes.			51350104

Conductivity standards

	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
1.3 µS/cm (single use check solution)	30090847		
5 µS/cm	30094617		
10 µS/cm	51300169		30111141
84 µS/cm	51302153		30111140
500 µS/cm	51300170		
1413 µS/cm	51350092	51350096	51302049
12.88 mS/cm	51350094	51350098	51302050

The Right Accessory
Extended Possibilities

Separate temperature sensors

Description	**InLab® NTC 30 kΩ** laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	**InLab® Pt1000** laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	**NTC 30 kΩ** laboratory temperature sensor in stainless steel (120 x 3 mm), steel 316	**Pt1000** laboratory temperature sensor in stainless steel (120 x 3 mm), steel 316
Order Number	51343310	51343312	51300164	51300165
Cable and connections	S7	S7	1.2 m; RCA plug	1.2 m; 2 x 4 mm banana

Accessories	Description	
Accessories for OptiOx™	OptiOx replacement cap	51344630
	OptiOx calibration tube	51344631
	OptiOx protective guard	51344632
	OptiOx BOD adapter	51344633
	OptiOx adapter for uPlace	30246619
Flow cell	Flow cell for sensors with a shaft diameter of 12 mm (material: glass)	51302257
Wetting caps	For electrodes with shaft diameter 12 mm	30243851
	For electrodes with shaft diameter 8 mm and InLab®Solids / InLab®Solids Pro (5 pcs.)	51340021
	For electrodes with shaft diameter 6 mm (5 pcs.)	51340019
	For electrodes with shaft diameter 3 mm (5 pcs.)	51340018
SafeLock™ blue	SafeLock™ cover for refill hole of pH electrodes (5 pcs.)	30248827
SafeLock™ white	SafeLock™ cover for refill hole of pH electrodes (5 pcs.)	30248829
Knick adapter	Adapter for sensors with 12 mm shaft diameter to work with Knick portable meters	30247853
Adapter	Adapter sleeve to NS 14.5 for sensors with 12 – 15 mm shaft diameter (material: PE)	51340024

Plug and Play
Sensor Cables

METTLER TOLEDO pH sensors can easily be connected to various third-party instruments. All you have to do is select the appropriate cable.

Save money and preserve the environment. Detachable cables can be reused when the pH sensor has reached its end of life.

Connection	Length	Designation	Plug	Socket on the meter	Order number
MultiPin™ 	1.2 m 3.0 m 5.0 m	BNC + RCA (Cinch)			30281896 30281897 30281898
	1.8 m	BNC + RCA (Cinch) IP67			30281913
	1.2 m	BNC + 1x4 mm			30281899
	1.2 m	DIN + RCA (Cinch)			30281910
	1.2 m	DIN 19262 + 1x4 mm			30281911
	1.2 m	Lemo 00 + 2x4 mm			30281912

Connection	Length	Designation	Plug	Socket on the meter	Order number
S7 	1.2 m 3.0 m 5.0 m	BNC			30281915 30281916 30281917
	1.2 m	BNC IP67			30281918
	1.2 m 3.0 m 5.0 m	DIN 19262			30281919 30281920 30281921
	1.2 m	Lemo 00			30281925
	3.0 m 5.0 m 10.0 m	no connector			30281926 30281927 30281928
For reference electrodes and temperature probes 	1.2 m	4 mm banana			30281922
	1.2 m	2 mm banana			30281923
	1.2 m	RCA (Cinch)			30281924

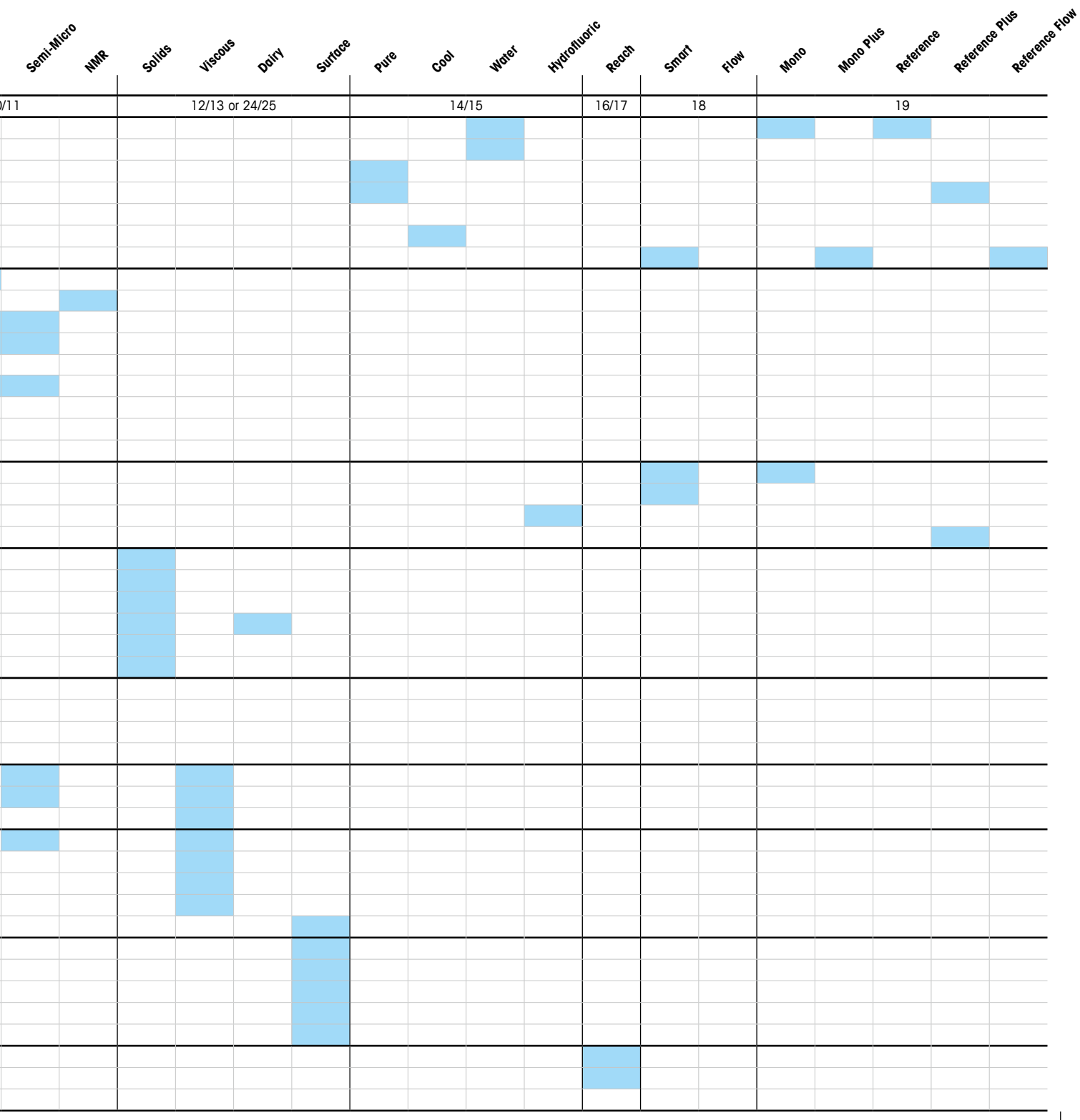
Which pH Sensor for Which Application?

The table below helps you to find the best sensor for your application. For more detailed information on the individual sensors refer to the indicated pages of the brochure or visit www.mt.com/electrode-guide

Application		InLab® Routine	InLab® Max	InLab® Science	InLab® Versatile	InLab® Expert	InLab® Easy	InLab® Power	InLab® Nano	InLab® Micro
	see page	6/7				8/9 or 24/25				10
Aqueous samples	Drinking water	■			■					
	Soft surface water									
	Pure and ultrapure water									
	Waste water		■	■		■				
	Higly saline solutions, sea water	■								
	Cold samples (< 5 °C)									
	Hot sample (> 100 °C)							■		
Pharmaceutical & biological samples	Vials and microplates								■	■
	NMR tubes									
	Test tubes								■	■
	Serum and gastric juice									■
	TRIS buffer	■	■	■						
	Micro-biological sample		■	■						■
	Disinfection	■								
	Yeast fermentation solution		■	■		■				
	Starch solution		■	■						
Chemicals & baths	Corrosive acids/bases	■						■		
	Galvanic bath	■						■		
	HF bearing sample (< 1 g/L)									
	Organic solvents		■	■						
Food	Fruit & vegtables									
	Meat & fish									
	Dough									
	Milk & cream							■		
	Butter, yogurt & ice cream									
	Cheese									
Beverages	Soft drinks				■		■			
	Fruit juice		■			■				
	Beer				■	■	■			
	Wine					■				
Viscous samples	Gels, soaps & shampoos									
	Cosmetics									
	Resins									
Emulsion	Paints									
	Oily samples									
	Colorants & dyes									
	Varnish and glue									
	Suspended solids (e.g. soil)					■				
Surface measurements	Skin & leather									
	Textil & prints									
	Paper									
	Agar plates									
	Drop size sample									
Large sample vessels	Pilot reactors									
	Tanks & barrels									
	Aquariums					■	■			

www.mt.com/electrode-guide

This interactive guide makes the sensor selection even easier. Additionally you find best practice sensor handling movies, a troubleshooter and much more.



Complete Solutions

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