

# InLab® Sensors



## InLab® Sensors

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pH

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ORP

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Conductivity

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Ion Concentration

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Dissolved Oxygen

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## Origin of Precision

Proven Sensor Technology for Safe Results

**METTLER TOLEDO**

# InLab<sup>®</sup> 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 for your measurement comes together with the sensor. Your work in the lab will be simplified by application specific sensors, automatic recognition of ISM sensors and the spillfree wetting cap.

### Built to Last



The thought-out 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 extends 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<sup>®</sup> 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 error for high pH values and high temperatures.

**U** – Universal glass for standard applications and small membranes.

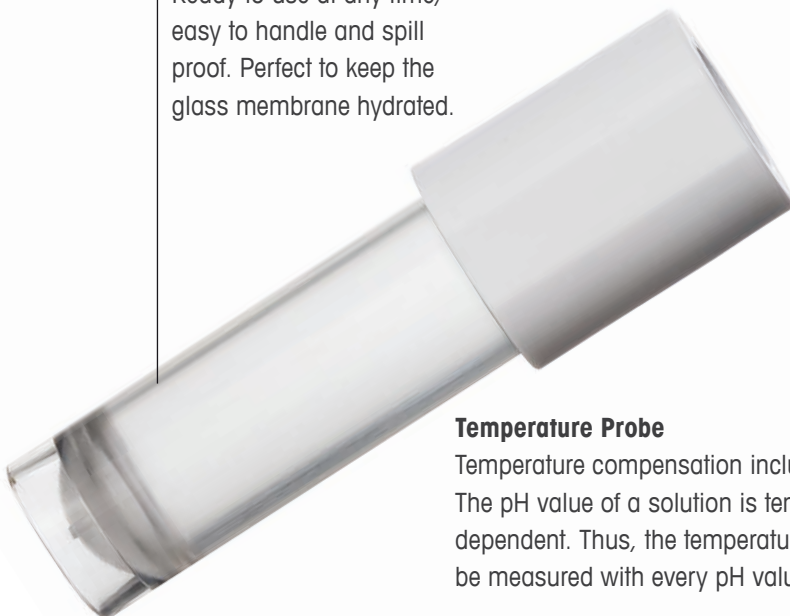
**A41** – highly robust glass particularly resistant to harsh chemicals, suitable for high temperatures.

**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).

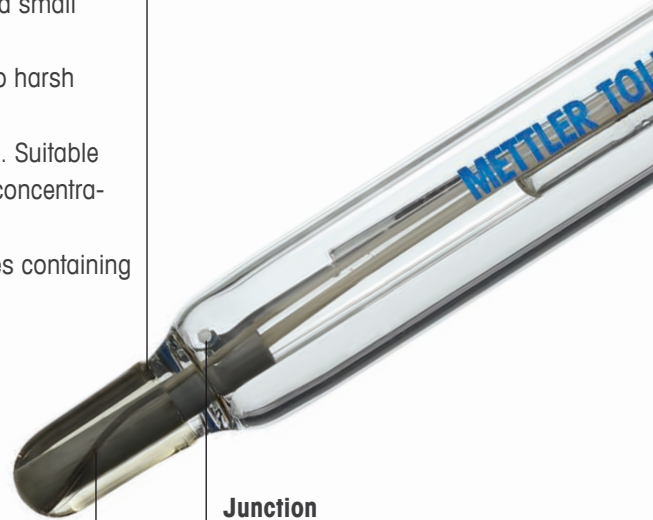
### Wetting Cap

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



### Temperature Probe

Temperature compensation included! The pH value of a solution is 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.

### 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 temperatures. When mechanical robustness is key, plastic is the preferred material.

### Reference System

Provides a stable potential against which the pH dependent potential can be compared.

### ARGENTHAL™ with silver ion trap

For silver ion free electrolyte. No clogging of the junction due to 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.

Learn more about the InLab sensor portfolio and the various technological aspects at:

► [www.mt.com/electrode-guide](http://www.mt.com/electrode-guide)

# 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-through 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	U	
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	
Common specifications	Storage: InLab® storage solution (Order number 30111142)		

# 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.



	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
<b>Technical pH buffer solutions</b>			
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
<b>NIST/DIN pH buffer solutions</b>			
4.006	51350052		30111136
6.865	51350054		30111137
9.180	51350056		30111138
10.012	51350058		30111139
<b>Certified pH buffer solutions</b>			
4.01	51350032	51350042	
7.00	51350034	51350044	
9.21	51350036	51350046	
10.00	51350038	51350048	
<b>Redox buffer solutions (E (Ag/AgCl) at 25 °C)</b>			
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
<b>Electrolytes for reference electrodes</b>			
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)		
<b>Maintenance solutions</b>			
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		
<b>Conductivity standards</b>			
	Order number 250 mL	Order number 6 x 250 mL	Order number sachets 20 mL
1.3 µS/cm (single use check solution)	30090847		
5 µS/cm	30094617		
10 µS/cm	51300169		30111141 (10 x 20 mL)
84 µS/cm	51302153		30111140 (10 x 20 mL)
500 µS/cm	51300170		
1413 µS/cm	51350092	51350096	51302049 (30 x 20 mL)
12.88 mS/cm	51350094	51350098	51302050 (30 x 20 mL)

# The Right Accessory

## Extended Possibilities



### Separate temperature sensors

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














Accessories	Description	
Accessories for InLab® OptiOx™	OptiOx replacement cap	51344630
	OptiOx calibration tube	51344631
	OptiOx protective guard	51344632
	OptiOx BOD adapter	51344633
	OptiOx adapter for uPlace electrode arm	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 family	51340021
	For electrodes with shaft diameter 6 mm	52000442
	For electrodes with shaft diameter 3 mm	52000441
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
<b>MultiPin™</b> 	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 banana			30281899
	1.2 m	DIN + RCA (Cinch)			30281910
	1.2 m	DIN 19262 + 1x4 mm banana			30281911
	1.2 m	Lemo 00 + 2x4 mm banana			30281912



Connection	Length	Designation	Plug	Socket on the meter	Order number
<b>S7</b> 	1.2 m	BNC			30281915
	3.0 m		30281916		
	5.0 m		30281917		
	1.2 m	BNC IP67			30281918
	1.2 m	DIN 19262			30281919
	3.0 m				30281920
5.0 m	30281921				
1.2 m	Lemo 00			30281925	
	3.0 m	no connector			30281926
	5.0 m		30281927		
	10.0 m		30281928		
<b>For reference electrodes</b>	1.2 m	4 mm banana			30281922
	1.2 m	2 mm banana			30281923
<b>For temperature probes</b>	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](http://www.mt.com/electrode-guide).

		<b>InLab®</b>									
<b>Application</b>		Routine	Max	Science	Versatile	Expert	Easy	Power	Nano	Micro	
	See page	6 / 7				8 / 9 and 24 / 25			10		
<b>Aqueous samples</b>	Drinking water										
	Soft surface water										
	Pure and ultrapure water										
	Waste water										
	Highly saline solution, sea water										
	Cold sample (< 5 °C)										
	Hot sample (> 100 °C)										
<b>Pharmaceutical &amp; biological samples</b>	Vial and microplate										
	NMR tube										
	Test tube										
	Serum and gastric juice										
	TRIS buffer										
	Micro-biological sample										
	Disinfection										
	Yeast fermentation solution										
	Starch solution										
<b>Chemicals &amp; baths</b>	Corrosive acid & base										
	Galvanic bath										
	HF bearing sample (< 1 g/L)										
	Organic solvent										
<b>Food</b>	Fruit & vegetable										
	Meat & fish										
	Dough										
	Milk & cream										
	Butter, yogurt & ice cream										
	Cheese										
<b>Beverages</b>	Soft drink										
	Fruit juice										
	Beer										
	Wine										
<b>Viscous samples</b>	Gel, soap & shampoo										
	Cosmetic										
	Resin										
<b>Emulsion</b>	Paint										
	Oily sample										
	Colorant & dye										
	Varnish and glue										
	Suspended solids (e.g. soil)										
<b>Surface measurements</b>	Skin & leather										
	Textil & print										
	Paper										
	Agar plate										
	Drop size sample										
<b>Large sample vessels</b>	Pilot reactor										
	Tank & barrel										
	Aquarium										

**[www.mt.com/electrode-guide](http://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.

Semi-Micro	NMR	Solids	Viscous	Dairy	Surface	Pure	Cool	Water	Hydrofluoric	Reach	Smart	Mono	Mono Plus	Reference	Reference Plus	Reference Flow
/ 11	12 / 13 and 24 / 25				14 / 15				16 / 17	18	19					



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**Use the above details to contact us if this literature doesn't answer all your questions.**

**Pricing on any accessories shown can be found by keying the part number into the search box on our website.**

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

