

pH/ORP Electrodes

INGOLD

Leading Process Analytics



Highest accuracy

Application-specific membrane glasses and reference systems

Built-in temperature sensor



pH Electrodes With Refillable Liquid Electrolyte
Your Highly Accurate Problem Solver

METTLER TOLEDO

Reliable pH Electrodes

With Long Operational Life

METTLER TOLEDO builds on the tradition of INGOLD by continuing to provide innovative new products and systems based on decades of accumulated knowledge and experience in process analytics.

Highly accurate and reliable measurements

The advanced technology and design features of our pH electrodes and housings ensure exact and stable measurement values in every application, whether in biotechnology, the food industry or especially challenging chemical processes.

Coping even under the harshest conditions

In hostile environments, refillable liquid-electrolyte electrodes have a proven record of highest measurement accuracy and extended serviceable life.

Retractable housings improve efficiency

Retractable housings meet today's strictest hygiene and operational safety standards, as well as allowing direct access to the electrode without costly process downtimes.

Customized certificates for each application

Certificates are provided which verify that our products will live up to the very highest expectations. They also serve to reduce the administrative effort for process documentation. We supply appropriate certificates for specific applications in the biotech, food and pharmaceutical industries (EHEDG, biocompatibility, FDA-approved materials), as well as in the chemical industry (ATEX/FM, certification in line with PED guidelines (European Pressure Equipment Directive)).



pH measurement in the biotech and pharmaceutical industries.



Chemical industry with pH measuring systems.



Pulp and paper industry with measuring systems.



pH measurement in the food processing industry.
Image: K.-H. Hug, Switzerland

Highly Accurate pH Measurement Assures Stability of Critical Processes

Refillable liquid-electrolyte pH electrodes of the Series InPro 2000 and 465-50

These electrodes are suitable for the broadest range of applications and the most demanding and problematic process conditions.

Customer benefits	Key features	InPro 2000 Series	465-50 Series
Best possible reproducibility and measuring performance	Pressurized reference system ensures permanent self-cleaning of the diaphragm	•	•
Highest measurement accuracy	Automatic temperature compensation from integrated temperature sensor (Pt 1000/Pt 100)	•	–
Maximum lifetime	Refillable reference electrolyte	•	•
Optimal measurement performance in any circumstance	Electrodes available with customized combination of glass membrane and reference system to suit the specific application	–	•
Prevention of contamination and clogging of the diaphragm in sulfide-bearing process medium	Patented silver ion trap in reference system	•	•
Optimal protection of the reference system in the harshest process conditions	Electrodes with bridge electrolyte for difficult media	•	•

Recommended housings

InPro 2000 and 465-50 electrodes can be used with either static or retractable housings:



Static housing
InFit 764 e



Retractable housings
InTrac 776 e
InTrac 796-M or P/75



Flow-through housing
InFlow 761

Important specifications for both series of electrodes, InPro 2000 and 465-50

These electrodes are suitable for the broadest range of applications and the most demanding and problematic process conditions. The outstanding performance offered by these highly accurate electrodes is based on a series of unique key features:

Specifications	InPro 2000 Series	465-50 Series
pH range	0 ... 14	0 ... 14
Temperature range	0 ... 140 °C (32 ... 284 °F)	0 ... 130 °C (32 ... 266 °F)
Pressure resistance (overpressure)	6 bar (87 psi)	6 bar (87 psi)
Temperature sensor	Pt 100 or Pt 1000	–
CIP-resistant	•	•
Sterilizable	•	•
Autoclavable	•	–
Ex certificate	•	–
Bridge electrolyte	•	•
ORP	–	•

Application specific reference electrolyte

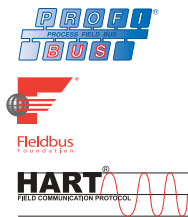
To cope optimally with the conditions prevailing in different types of chemical processes, a wide variety of electrolytes is available:

9816 Viscolyt	Mostly frequently used CP electrolyte with limited outflow and therefore long refill intervals.
9823 KCl	Classic electrolyte with high electrolyte outflow for improved diaphragm cleaning.
9848 Friscolyt	Used for media with proteins/organic solvent content, and in low-temperature sensors.
9830 LiCl in ethanol	Used in chemical processes containing organic solvents.
9840 Calcolyt	Used where there is the risk of calcium carbonate precipitation.
9902 Gypsolyt	Used where there is the risk of sulfate precipitation.
9813 KNO₃	Used as bridge electrolyte where Cl ⁻ ions interfere.



Complete pH Measurement Points for Your Process

The pH electrodes of the InPro 2000 and 465-50 Series are part of a carefully thought-out technical concept. They offer users a whole range of unique benefits.



Transmitters

- Easy to install and with user-friendly operator interface
- Meets full requirements for system integration (2- or 4-wires)
- Interface options for HART®, FOUNDATION™ fieldbus or PROFIBUS® PA
- ATEX/FM certification
- Wash contact for sensor diagnostics and cleaning functions

EasyClean systems

- Automated cleaning and calibration of electrodes
- Prolongs electrode life and improves measurement accuracy
- Greater reliability through continuous system-performance monitoring

pH electrodes

- Low maintenance, compact-design electrodes (PVDF body)
- Liquid-electrolyte electrodes, as well as non-glass electrodes

Housings for pH electrodes

- Static, retractable or flow-through housings
- Various process adaption methods
- Low maintenance effort and minimum process downtimes
- Designed for CIP procedures (Cleaning-In-Place)
- ATEX/FM, EHEDG certificates
- TriLock™ system provides protection against unintentional release of process medium



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