pH/ORP Electrodes

pH Electrodes With Refillable Liquid Electrolyte
Your Highly Accurate Problem Solver

Highest accuracy
Application-specific membrane glasses and reference systems
Built-in temperature sensor
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.

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.

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.

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)).
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.

<table>
<thead>
<tr>
<th>Customer benefits</th>
<th>Key features</th>
<th>InPro 2000 Series</th>
<th>465-50 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best possible reproducibility and measuring performance</td>
<td>Pressurized reference system ensures permanent self-cleaning of the diaphragm</td>
<td>•</td>
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<tr>
<td>Highest measurement accuracy</td>
<td>Automatic temperature compensation from integrated temperature sensor (Pt1000/Pt100)</td>
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<td>–</td>
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<tr>
<td>Maximum lifetime</td>
<td>Refillable reference electrolyte</td>
<td>•</td>
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<tr>
<td>Optimal measurement performance in any circumstance</td>
<td>Electrodes available with customized combination of glass membrane and reference system to suit the specific application</td>
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<tr>
<td>Prevention of contamination and clogging of the diaphragm in sulfide-bearing process medium</td>
<td>Patented silver ion trap in reference system</td>
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<td>Optimal protection of the reference system in the harshest process conditions</td>
<td>Electrodes with bridge electrolyte for difficult media</td>
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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:

<table>
<thead>
<tr>
<th>Specifications</th>
<th>InPro 2000 Series</th>
<th>465-50 Series</th>
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<tbody>
<tr>
<td>pH range</td>
<td>0…14</td>
<td>0…14</td>
</tr>
<tr>
<td>Temperature range</td>
<td>0…140 °C (32…284 °F)</td>
<td>0…130 °C (32…266 °F)</td>
</tr>
<tr>
<td>Pressure resistance (overpressure)</td>
<td>6 bar (87 psi)</td>
<td>6 bar (87 psi)</td>
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<tr>
<td>Temperature sensor</td>
<td>Pt100 or Pt1000</td>
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<tr>
<td>CIP-resistant</td>
<td>•</td>
<td>•</td>
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<tr>
<td>Sterilizable</td>
<td>•</td>
<td>–</td>
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<tr>
<td>Autoclavable</td>
<td>•</td>
<td>–</td>
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<tr>
<td>Ex certificate</td>
<td>•</td>
<td>–</td>
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<tr>
<td>Bridge electrolyte</td>
<td>•</td>
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<tr>
<td>ORP</td>
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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 Friscoylt**: 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 KNOs**: 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

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

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

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