

# InPro 4260 (i)/InPro 4281 i

## Reliable, Long-lasting Electrodes



InPro 4260i

InPro 4281i

The InPro 4260 (i)/InPro 4281 i is a combined pH electrode and temperature sensor family designed for highly demanding chemical applications. InPro 4260 (i)/InPro 4281 i electrodes feature Xerolyt® Extra polymer reference electrolyte for precise pH measurement and longer lifetime, even under the most difficult industrial environments. Also available with Intelligent Sensor Management (ISM) for Plug and Measure and advanced diagnostics.

### Specifications

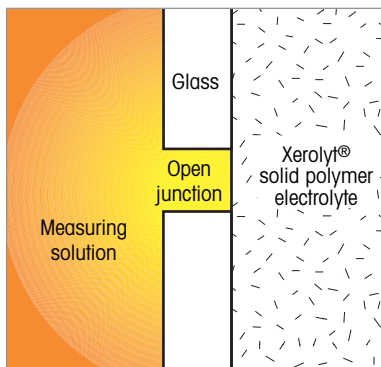
pH range	0–14 pH InPro 4260 (i); 1–14 pH InPro 4261 (i), InPro 4281 (i)
Temperature	InPro 4260 (i), InPro 4281 i: 0 to 130°C (32 to 266°F) InPro 4262 (i): 0 to 80°C (32 to 176°F)
Operating pressure	15 barg @ 25 °C, 7 barg @ 130 °C (0 to 217 psig @ 77 °F, 101 psig @ 266 °F)
Cable connection	ISM: K8S; Analog: VP
Process connection	Pg 13.5 thread
Reference system	Argenthal
Type of junction	Open junction with direct contact to media
Reference electrolyte	Xerolyt® Extra
Lengths	120 mm, 225 mm, 425 mm
Shaft diameter	12 mm
Shaft materials	InPro 426x (i): Glass; InPro 428x i: Titanium
Temperature sensor	ISM: Digital; Analog: Pt100 or Pt1000
Sterilizable	No
Autoclavable	No
pH membrane	Various by applications
Solution ground	InPro 426x (i): Platinum; InPro 428x i: Titanium
<b>Certificates and Approvals</b>	METTLER TOLEDO Quality Certificate, Pressure Equipment Directive guidelines (PED) 97/23/EC, ATEX: Ex ia IIC T6/T5/T4/T3 Ga/Gb, FM: IS Cl. I, II, III, Div 1, GR ABCDEFG/T6 EN 10204-3.1 (InPro 4281 i)

### Intelligent Sensor Management (ISM)

pH electrodes with integrated ISM functionality allow Plug and Measure and advanced diagnostics. ISM simplifies the installation, handling and maintenance of measurement equipment. For more information see ISM introduction pages 10–11.

### Features Overview

- Xerolyt polymer electrolyte
- Open junction eliminates clogging
- Resistant to poisoning substances
- Expanded pH range covers 0–14 pH
- Resistant to solvents, strong acids and alkali
- Domed glass membrane impedes bubble formation for greater reliability
- Watertight connector (IP68), integral temperature sensor
- ATEX and FM certified for hazardous areas
- InPro 4281 i electrode is made with a rugged titanium shaft, providing exceptional chemical resistance and durability.
- InPro 4281 i features a flat pH membrane suited for fibers and high solids samples



Open reference junction

► [www.mt.com/InPro4260](http://www.mt.com/InPro4260)

## Ordering Information

ISM Electrodes	Length	Temp. Signal	Order Number
InPro 4260 i/SG	120 mm	Digital	52 005 381
InPro 4260 i/SG	225 mm	Digital	52 005 382
InPro 4260 i/SG	425 mm	Digital	52 005 407
InPro 4262 i/SG	120 mm	Digital	30 018 467
InPro 4262 i/SG	225 mm	Digital	30 018 468
InPro 4281 i/SG	120 mm	Digital	30 301 402
InPro 4281 i/SG	225 mm	Digital	30 301 403
InPro 4281 i/SG	425 mm	Digital	30 301 404
<b>Analog Electrodes</b>			
InPro 4260	120 mm	Pt 100	52 002 986
InPro 4260	120 mm	Pt 1000	52 002 987
InPro 4260	225 mm	Pt 100	52 002 988
InPro 4260	225 mm	Pt 1000	52 002 989
InPro 4260	425 mm	Pt 100	52 002 992
InPro 4260	425 mm	Pt 1000	52 002 993
InPro 4260SG	120 mm	Pt 100	52 003 545
InPro 4260SG	120 mm	Pt 1000	52 003 546
InPro 4260SG	225 mm	Pt 100	52 003 547
InPro 4260SG	225 mm	Pt 1000	52 003 548
InPro 4262	120 mm	Pt 100	52 003 549
InPro 4262	120 mm	Pt 1000	52 003 550
InPro 4262	225 mm	Pt 100	52 003 551
InPro 4262	225 mm	Pt 1000	52 003 552
InPro 4262	425 mm	Pt 100	52 003 553
InPro 4262	425 mm	Pt 1000	52 003 554



### Did You Know

The InPro 4260 (i) family now also includes a hydrofluoric acid resistant glass formulation. Solution ground stabilizes the high impedance pH signal and provides an additional reference point for sensor diagnostics which can detect changes in performance due to influence of the media.



### InPro Sensor Designation

The last digit of the InPro designation indicates the pH glass type:

- 00 – High alkali glass (HA)
- 01 – Low temperature glass (LoT)
- 02 – Hydrofluoric acid resistant glass (HF)
- 03 – Steam sterilizable glass (A41)

Suitable Housings	p.
InFit 761 e.....	110
InFit 762 e.....	112
InFlow .....	114
InDip .....	113
InTrac 777 e.....	119
InTrac 797 e.....	120
InTrac 781 .....	121
InTrac 785/787 .....	122

# InPro 4550/InPro 4501

## The Rugged Solution



InPro 4550

InPro 4501 VP



The InPro 4550/4501 are rugged, low maintenance, combination pH/temperature sensors, designed to handle harsh chemical processes and industrial wastewater applications. The durable polymer body houses a solid polymer reference electrolyte, making the electrode robust from both physical and chemical attack. A solution ground prevents ground loop problems and allows advanced sensor diagnostics. The solid polymer electrolyte is in direct contact with the sample medium, eliminating potential for junction fouling. The InPro 4501's flat glass pH membrane is protected against breakage and is self-cleaning in flowing applications. The higher pressure/temperature specifications of the InPro 4550 target demanding applications with heavily contaminated media and aggressive industrial chemicals.

### Specifications

	InPro 4550	InPro 4501
pH range	0–14 pH	1–14 pH
Temperature	0 to 130 °C (32 to 266 °F)	0 to 100 °C (32 to 212 °F)
Operating pressure	0 to 7 barg @ 130 °C (0 to 101 psig @ 266 °F)	0 to 6 barg @ 65 °C (0 to 87 psig @ 149 °F)
Cable connection	VP	VP or fixed cable
Process connection	1" MNPT	1" MNPT
Reference system	Argenthal	Argenthal
Type of junction	Open aperture, double junction	Open aperture, double junction
Reference electrolyte	Xerolyt Extra, solid polymer	Xerolyt Extra, solid polymer
Solution ground	Titanium	Titanium
Immersion length	72.5 mm (from front threads)	72.5 mm (from front threads)
Process connection	1" MNPT, 2-places	1" MNPT, 2-places
Temperature sensor	Pt 100, Pt 1000	Pt 100, Pt 1000
Body material	PPS (polyphenylene sulfide)	PVDF
Sterilizable	No	No
Autoclavable	No	No
pH membrane	High alkali glass (HA)	Flat membrane with low temperature glass (LoT)

Certificates and Approvals	METTLER TOLEDO Qual. Cert., Pressure Equipment Directive guidelines (PED) 97/23/EC, ATEX: Ex ia IIC T6/T5/T4/T3 Ga/Gb, FM: IS Cl. I, II, III, Div 1, GR ABCDEFG/T6	METTLER TOLEDO Qual. Cert.
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### Features Overview

- Withstands high process temperature and pressure (InPro 4550)
- PPS body is highly resistant to chemical attack (InPro 4550)
- Open aperture junction resists fouling
- Solid polymer electrolyte requires no refilling, reduces maintenance
- Watertight connector (IP 68) for easy connection and excellent signal transmission
- Dual NPT threads allow direct mounting into process
- Solution ground allows sensor diagnostics and eliminates ground loop problems

▶ [www.mt.com/InPro4550](http://www.mt.com/InPro4550)  
▶ [www.mt.com/InPro4501](http://www.mt.com/InPro4501)

### Ordering Information

Electrode	Connection	Cable Length	Temperature Sensor	Order Number
<b>InPro 4550</b>				
InPro 4550	VarioPin	N/A	Pt100	52 002 401
InPro 4550	VarioPin	N/A	Pt1000	52 002 402
<b>InPro 4501</b>				
InPro 4501	VarioPin	N/A	Pt100	59 909 570
InPro 4501	VarioPin	N/A	Pt1000	59 909 571
InPro 4501	Fixed cable	3m (9.8ft)	Pt100	59 909 542
InPro 4501	Fixed cable	3m (9.8ft)	Pt1000	59 909 545
InPro 4501	Fixed cable w/BNC	3m (9.8ft)	Pt100	59 909 543
InPro 4501	Fixed cable	10m (32.8ft)	Pt100	59 909 546
InPro 4501	Fixed cable	10m (32.8ft)	Pt1000	59 909 548
<b>Accessory</b>				
Protective sleeve				52 401 808

For pH buffers, refer to "pH and Redox Accessories" section.

For cables, cable lengths and for terminating connectors, refer to "Cables" section on pages 132–135.



### Did You Know

The protective sleeve for the InPro 4550 and InPro 4501 keeps the connection clean in dirty environments and protects the cable from stress.



Slotted tip protects the pH glass membrane



Flat glass pH membrane and solution ground

Suitable Housings	p.
InDip 550 .....	113

# InPro 4800 (i)/InPro 4881 i For Harsh Environments



InPro 4800 i



InPro 4881 i

The InPro 4800 (i)/InPro 4881 i is the top-of-the-line combined pH and temperature electrode family designed to handle high-temperature and high-pressure dirty chemical applications. The strong resistance to oxidizing media, solvents, acid and alkali solutions make it suitable for highly demanding industrial applications including chemical processing, chlor-alkali, pulp and paper, dyes and pigments, and sugar processing.

Also available with Intelligent Sensor Management (ISM) for Plug and Measure and advanced diagnostics.

### Specifications

pH range	0 – 14 pH InPro 4800 (i); 1 – 14 pH InPro 4801 (i), InPro4881 i 1 – 11 pH InPro 4802 (i)
Temperature	InPro 4800 (i), InPro 4801 (i), InPro 4881 i: – 5 to 130 °C (23 to 266 °F) InPro 4802 (i): 0 to 80 °C (32 to 176 °F)
Operating pressure	12 barg @ 130 °C (174 psig @ 266 °F)
Cable connection	ISM: K8S; Analog: VP
Process connection	Pg 13.5 thread
Reference system	Ag / AgCl system, pressure-compensated double gel-electrolyte chambers
Type of junction	Exterior: PTFE annular diaphragm Interior: Non-flow ceramic diaphragm
Reference electrolyte	Gel
Lengths	120 mm, 225 mm, 425 mm
Shaft diameter	12 mm
Shaft materials	InPro 480x (i): Glass InPro 488x i: Titanium
Temperature sensor	ISM: Digital; Analog: Pt 100 or Pt 1000
pH membrane	Various by applications
Solution ground	InPro 480x (i): Platinum InPro 488x i: Titanium
Sterilizable	No
Autoclavable	No
Solution ground	Platinum
Glass membrane	InPro 4800: Cylindrical, high alkali quality glass InPro 4801 SG, InPro 4881 i: Flat, low impedance quality glass

**Certificates and Approvals** METTLER TOLEDO Quality Certificate  
Pressure Equipment Directive guidelines (PED) 97/23/EC,  
ATEX: Ex ia IIC T6/T5/T4/T3 Ga/Gb,  
FM: IS Cl. I, II, III, Div 1, GR ABCDEFG/T6  
EN 10204-3.1 (InPro 4281 i)

### Intelligent Sensor Management (ISM)

pH electrodes with integrated ISM functionality allow Plug and Measure and advanced diagnostics. ISM simplifies the installation, handling and maintenance of measurement equipment. For more information see ISM introduction pages 10–11.

▶ [www.mt.com/InPro4800](http://www.mt.com/InPro4800)

## Ordering Information

ISM Electrodes	Length	Temp. Signal	Order Number
InPro 4800 i/SG	120 mm	Digital	52 005 383
InPro 4800 i/SG	225 mm	Digital	52 005 384
InPro 4800 i/SG	425 mm	Digital	52 003 748
InPro 4801 i/SG	120 mm	Digital	52 003 581
InPro 4801 i/SG	225 mm	Digital	52 069 539
InPro 4801 i/SG	425 mm	Digital	52 003 857
InPro 4802 i/SG	120 mm	Digital	52 003 696
InPro 4802 i/SG	225 mm	Digital	52 003 697
InPro 4881 i/SG	120 mm	Digital	30 301 405
InPro 4881 i/SG	225 mm	Digital	30 301 406
InPro 4881 i/SG	425 mm	Digital	30 301 407

## Analog Electrodes

InPro 4800	120 mm	Pt 100	52 002 124
InPro 4800	120 mm	Pt 1000	52 002 125
InPro 4800 SG	120 mm	Pt 100	52 003 541
InPro 4800 SG	120 mm	Pt 1000	52 003 542
InPro 4800	225 mm	Pt 100	52 002 126
InPro 4800	225 mm	Pt 1000	52 002 127
InPro 4800 SG	225 mm	Pt 100	52 003 543
InPro 4800 SG	225 mm	Pt 1000	52 003 544
InPro 4800	425 mm	Pt 100	52 002 129
InPro 4800	425 mm	Pt 1000	52 002 130
InPro 4801 SG	120 mm	Pt 100	52 002 131
InPro 4801 SG	120 mm	Pt 1000	52 002 132
InPro 4802	225 mm	Pt 100	52 002 718
InPro 4802 SG	225 mm	Pt 1000	52 003 398

## Features Overview

- High pressure/high temperature rating 12 barg @ 130 °C (174 psig @ 266 °F)
- Very long diffusion path using two electrolyte chambers
- PTFE annular junction repels dirt
- Resistant to strong oxidizing agents, solvents, acids and alkali, and to poisoning substances
- Watertight connector (IP 68), integral temperature sensor
- InPro 4801 (i) and InPro 4881 i feature a flat pH membrane suited for fibers and high solids samples
- ATEX and FM certified for hazardous areas
- InPro 4881 i electrode is made with a rugged titanium shaft, providing exceptional chemical resistance and durability.



## InPro Sensor Designation

The last digit of the InPro designation indicates the pH glass type:

- 00 – High alkali glass (HA)
- 01 – Low temperature glass (LoT)
- 02 – Hydrofluoric acid resistant glass (HF)
- 03 – Steam sterilizable glass (A41)



## Quick Tip

A combination pH electrode should never be stored dry as this will dehydrate the electrode. Also, do not store an electrode in deionized water, rather, soak the electrode in the pH buffer or electrolyte recommended in the electrode manual.



## Did You Know

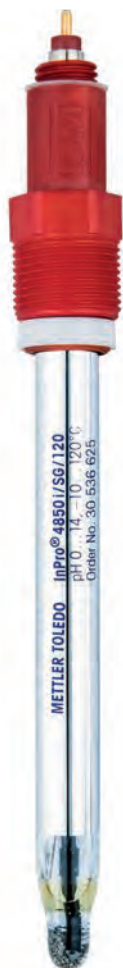
The InPro 4801 (i) SG electrode features a unique flat glass membrane ideal for applications with high fiber or solid concentrations.

## Suitable Housings

	p.
InFit 761 e .....	110
InFit 762 e .....	112
InFlow .....	114
InDip .....	113
InTrac 777 e .....	119
InTrac 781 .....	121
InTrac 785/787 .....	122

# InPro 4850 i

## For the Toughest Chlor-Alkali Processes



InPro 4850 i is a combination pH electrode featuring a sodium membrane glass that uses the sodium concentration in the process (brine) as a reference. The difference in electrical potential between the pH-glass and the sodium reference glass is converted into the pH value. The sodium reference system is highly resistant to chlorine and other oxidizing agents. This makes the sensor very well suited for the demanding process conditions in chlor-alkali production. Solution ground and shielding eliminate interference, and enable redox measurement. Digital signal conversion ensures 100% signal integrity and stability. Intelligent Sensor Management (ISM) technology simplifies sensor handling and reduces sensor lifecycle costs.

### Specifications

pH range	0 – 14 pH
Temperature	– 10 to 120 °C (14 to 248 °F)
Operating pressure	0 to 12 barg @120 °C (0 to 174 psig @ 248 °F)
Cable connection	ISM: K8S
Process connection	Pg 13.5 thread
Reference system	Sodium sensitive glass membrane
Type of junction	None
Lengths	120 mm, 225 mm
Shaft diameter	12 mm
Temperature sensor	Digital
Sterilizable	No
Autoclavable	No
pH membrane	High alkali glass (HA)
Min. Na+ concentration	10 mg/L when pH > 7; 100 mg/L when 7 > pH > 2; 1 g/L when pH < 2
Storage solution	Storage solution buffer pH = 4.01/Na 3.9 M (P/N 52 004 103)

**Certificates and Approvals** METTLER TOLEDO Quality Certificate, Pressure Equipment Directive guidelines (PED) 97/23/EC ATEX: Ex ia IIC T6/T5/T4/T3 Ga/Gb, FM: IS Cl. I, II, III, Div 1, GR ABCDEFG/T6

### Intelligent Sensor Management (ISM)

pH electrodes with integrated ISM functionality allow Plug and Measure and advanced diagnostics. ISM simplifies the installation, handling and maintenance of measurement equipment. For more information see ISM introduction pages 10–11.

InPro 4850 i requires a near stable sodium concentration for the best measurement results. A 10% difference in brine concentration leads to 0.05 pH error.

### Features Overview

- Hermetically sealed reference system resistant to any effects from poisoning substances such as chlorine.
- Very high resistance to oxidizing media, solvents, and acid or alkali solutions.
- Reliable operation in processes with particularly high pressures and high temperatures.
- Platinum solution ground (SG) electrode enables redox (ORP) measurement and advanced sensor diagnostics, as well as preventing measurement errors due to ground potentials.

▶ [www.mt.com/InPro4850](http://www.mt.com/InPro4850)



### Ordering Information

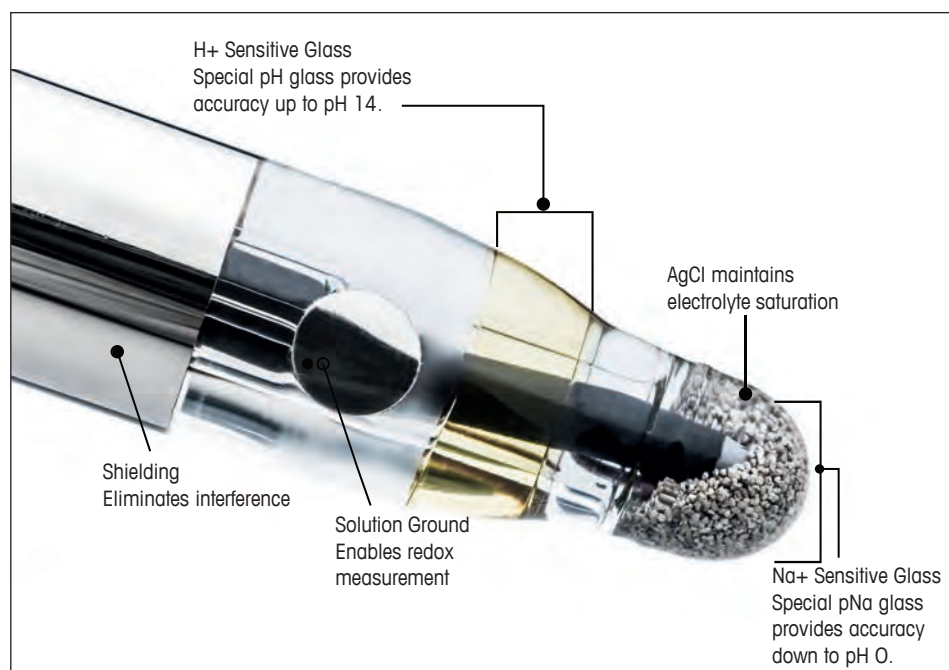
pH Electrodes	Length	Order Number
InPro 4850i/SG	120mm	30 536 625
InPro 4850i/SG	225mm	30 536 627

pH Buffers	Order Number	Order Number
Designation	1 × 250 ml	6 × 250 ml
pH 2.00, 3.9M NaCl	52 004 100	52 004 101
pH 4.01, 3.9M NaCl	52 004 103	52 004 104
pH 7.00, 3.9M NaCl	52 004 106	52 004 107
pH 9.21, 3.9M NaCl	52 004 109	52 004 110

Redox Buffers	Order Number	Order Number
Designation	1 × 250 ml	6 × 250 ml
Redox buffer 320mV, 3.9M NaCl	30 104 917	–

### AK9 Coax Cables (–25 °C to 70 °C / –13 to 158 °F)

Designation	Connector	Cable Length	Order Number
AK9	open	1 m (3.3ft)	59 902 167
AK9	open	3 m (9.8ft)	59 902 193
AK9	open	5 m (16.4ft)	59 902 213
AK9	open	10m (32.8ft)	59 902 230
AK9	open	20m (65.6ft)	52 300 204



**Did You Know**  
 InPro 4850i is the unique dual-membrane pH sensor with ISM digital signal for resisting chlorine and other oxidizing solutions.

Suitable Housings	p.
InFit 761 e.....	110
InFit 762 e/763 e.....	112
InFlow 751 .....	114
InTrac 787 .....	122