

ProcessLine

*Process electrodes for measuring
pH, temperature and redox potentials*

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One for all Applications

ProcessLine electrodes are low maintenance sensors for heavy duty process applications, as they are especially present in the chemical industry.

They are ideally suitable for measuring media with extreme ionic strength - whether boiler feed water or brine - also in strongly oxidizing acid and alkali containing media.

The **ProcessLine** electrodes' special design with regard to accuracy, stability, rapidness and durability is very close to the one of liquid electrolyte electrodes, although the **ProcessLine** does not require refilling the electrolytes and its complex pressure sequence regulation. Therefore the **ProcessLine** electrodes require only low-maintenance, including calibration and adjusting efforts, hence offering a high potential for cost savings.

Duralid solid electrolyte with high content of KCl and special formulation

The solid reference electrolyte **Duralid** does not require a special diaphragm – the reference system holds a direct contact to the measuring media via the two open connections. This minimizes the risk of contamination/ blockage of the diaphragm – the main source for measuring failures and even outfall – and guarantees long durability and high accuracy.

The long lifetime and small liquid junction potential resulting in high accuracy measurements of the **ProcessLine** electrodes is based on the special formula and fabrication of the **Duralid** electrolyte:

- High content of the conductivity salt potassium chloride in polymer and therefore high electrolyte output into the measuring media, reduces the interferences of the measurement through diffusion potentials between the junction of reference electrode and measuring media.
- The special distribution of the potassium chloride in the **Duralid** polymer counteracts positively against a reduced durability of the reference system, by releasing a high quantity of electrolytes.

This special attribute given by the **Duralid**, does not only improve the durability and the response characteristic, it also enables stable measuring values – even under most difficult conditions such as changing flow rate/ rotational frequency of stirrer or with measurements in organic solvents.

Cushion for pressure compensation in the reference electrode

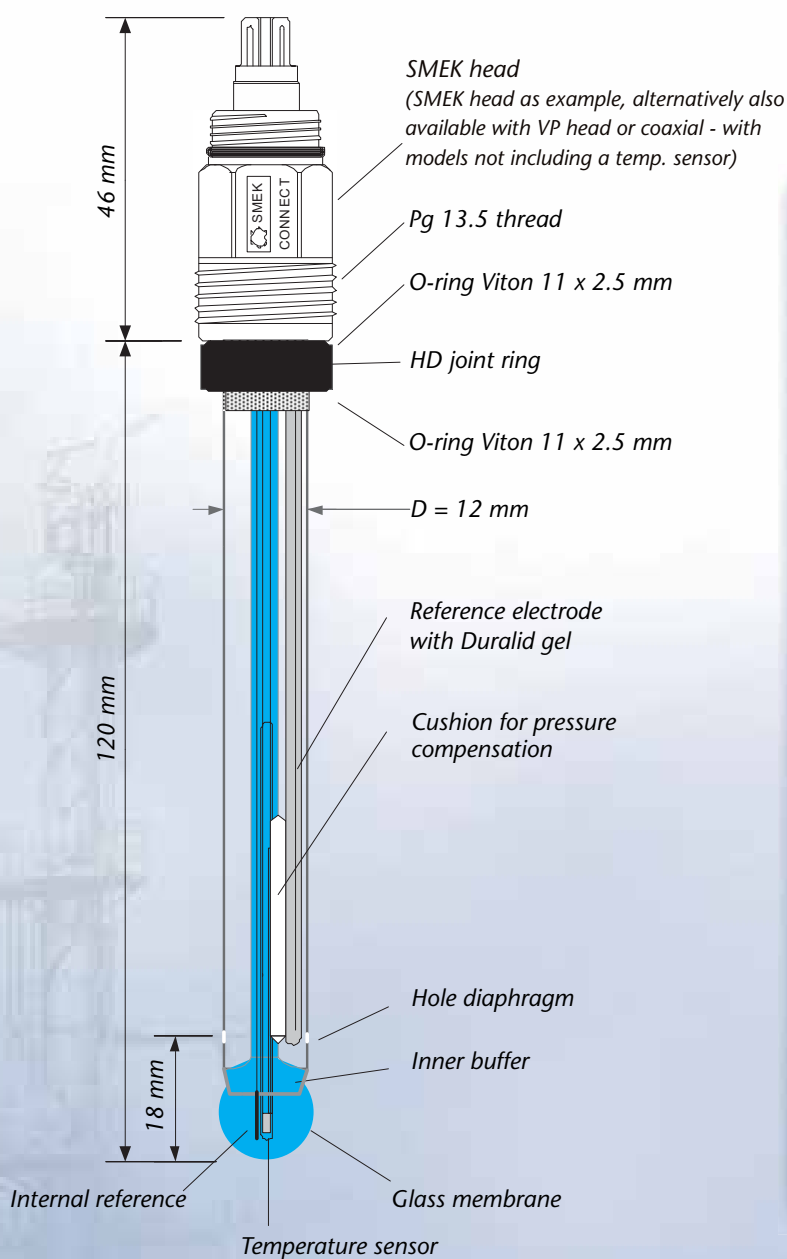
Pressure and temperature fluctuations can easily be managed by the **ProcessLine** electrodes due to the integrated pressure compensation cushion inside the reference electrode.

Reliable H membrane glass

Besides the reference electrode, also the measuring electrode is of great importance regarding rapidness and accuracy of the measurement. The glass electrode of the **ProcessLine** series features a H membrane glass, a very high-quality and approved special glass. It excels by its high-temperature application range and very low alkaline errors.

The special ball shape enables an optimal membrane resistance of 300 MΩ and ensures an easy cleaning.

pH measuring range	0 ... 14
Temperature range	0 ... 130 °C
Pressure range	10 bar for the total temperature range, TÜV certified (tested with three times safety)
Reference systems	Duralid polymer electrolyte, low-maintenance; Ag/AgCl system
Diaphragm	2 hole diaphragms
Glass membrane	ball shape, H-glass type, membrane resistancy 300 MOhm
Shaft material	glass
Shaft diameter	12 mm
Shaft length	120, 225, 325, 360 and 425 mm
Connection	screw plug head with thread Pg 13.5; depending on type coaxial, SMEK or VP (for details please view the ordering specifications)
Protection class	IP 68



ProcessLine pH combination electrodes

ProcessLine Electrodes

Advantages at a glance!

- ▶ **Low maintenance**, i. e. no refilling of electrolyte or installation of complicated pressure sequence regulations.
- ▶ **Hole diaphragms**, therefore no contamination or blockage of the reference electrode.
- ▶ **Duralid electrolyte with high proportion of KCl and special consistency**
Long durability as well as fast and stable measuring values. Furthermore, no substances of animal origin.
- ▶ **Cushion in the reference electrode** for compensation of pressure and temperature fluctuation.
- ▶ **Approved H membrane glass** with very low alkaline error and optimized ball shape.
- ▶ **Wide application range for media** with extreme ionic strength, strong oxidation character, high alkaline or acid components and also organic solvents.
- ▶ **Certificate for temperature and pressure resistance** of 10 bar at 0° to 130°C.
- ▶ **Shaft length** from 120, 225, 325, 360 and 425 mm suitable for all assembling conditions.
- ▶ **Versions with Pt 100 and Pt 1000 temperature sensor** with SMEK- and also VP plug head for high flexibility.

Electrodes and cables

Type number	Order number	Measuring mode	Shaft length L [mm]	Temperature sensor	screw plug head with Pg 13.5; type	Recommended connection cable
PL 80-120pH	285113490	pH	120		coaxial	K 5 X HT ^{*1}
PL 80-225pH	285113720	pH	225		coaxial	K 5 X HT ^{*1}
PL 80-325pH	285113780	pH	325		coaxial	K 5 X HT ^{*1}
PL 80-360pH	285113790	pH	360		coaxial	K 5 X HT ^{*1}
PL 80-425pH	285113800	pH	425		coaxial	K 5 X HT ^{*1}
PL 81-120pHT	285113500	pH + temp.	120	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL 81-120pHT VP	285113550	pH + temp.	120	Pt1000	VP	VP 6-19/05 ^{*3}
PL 81-225pHT	285113510	pH + temp.	225	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL 81-225pHT VP	285113560	pH + temp.	225	Pt1000	VP	VP 6-19/05 ^{*3}
PL 81-325pHT	285113520	pH + temp.	325	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL 81-325pHT VP	285113570	pH + temp.	325	Pt1000	VP	VP 6-19/05 ^{*3}
PL 81-360pHT	285113530	pH + temp.	360	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL 81-360pHT VP	285113580	pH + temp.	360	Pt1000	VP	VP 6-19/05 ^{*3}
PL 81-425pHT	285113540	pH + temp.	425	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL 81-425pHT VP	285113590	pH + temp.	425	Pt1000	VP	VP 6-19/05 ^{*3}
PL 82-120pHT	285113600	pH + temp.	120	Pt100	SMEK	SMEK-19/05 ^{*2}
PL 82-120pHT VP	285113650	pH + temp.	120	Pt100	VP	VP 6-19/05 ^{*3}
PL 82-225pHT	285113610	pH + temp.	225	Pt100	SMEK	SMEK-19/05 ^{*2}
PL 82-225pHT VP	285113660	pH + temp.	225	Pt100	VP	VP 6-19/05 ^{*3}
PL 82-325pHT	285113620	pH + temp.	325	Pt100	SMEK	SMEK-19/05 ^{*2}
PL 82-325pHT VP	285113670	pH + temp.	325	Pt100	VP	VP 6-19/05 ^{*3}
PL 82-360pHT	285113630	pH + temp.	360	Pt100	SMEK	SMEK-19/05 ^{*2}
PL 82-360pHT VP	285113680	pH + temp.	360	Pt100	VP	VP 6-19/05 ^{*3}
PL 82-425pHT	285113640	pH + temp.	425	Pt100	SMEK	SMEK-19/05 ^{*2}
PL 82-425pHT VP	285113690	pH + temp.	425	Pt100	VP	VP 6-19/05 ^{*3}
PL 89-120Pt	285113700	redox	120		coaxial	K 5 X HT ^{*1}
PL 89-225Pt	285113710	redox	225		coaxial	K 5 X HT ^{*1}
PL 89-325Pt	285113750	redox	325		coaxial	K 5 X HT ^{*1}
PL 89-360Pt	285113760	redox	360		coaxial	K 5 X HT ^{*1}
PL 89-425Pt	285113770	redox	425		coaxial	K 5 X HT ^{*1}
PL PETR-120	285113730	pH + temp. + redox	120	Pt1000	SMEK	SMEK-19/05 ^{*2}
PL PETR-120VP	285113740	pH + temp. + redox	120	Pt1000	VP	VP 6-19/05 ^{*3}

* Ordering numbers for connecting cables: 1 = 285124157, 2 = 285129747, 3 = 285129841

Buffer and cleaning solutions

Type number	Order number	Description
L4798	285138238	Buffer solution in FIOLAX® ampoules: 3 x 20 ampoules, DIN buffer solutions pH = 4.01 / 6.87 / 9.18, sterilized with manufacturer certificate
L4698	285138192	Buffer solutions in FIOLAX® ampoules: 3 x 20 ampoules, Technical buffer solution pH = 4.00 / 7.00 / 10.01, sterilized
LC4004K	285139156	Buffer solutions in bottles: 250 ml in PE bottle, colored buffer solution, pH = 4.01
LC7004K	285139189	Buffer solutions in bottles: 250 ml in PE bottle, colored buffer solution, pH = 7.00
LC1004K	285139218	Buffer solutions in bottles: 250 ml PE bottle, colored buffer solution, pH = 10.01
L9114	285138560	Electrolyte solution in bottles: 250 ml in DURAN® glass bottle, storing electrolyte solution, sterilized
L5104	285138295	Cleaning solution: 250 ml in DURAN® glass bottle, cleaning solution, pepsin/hydrochloric acid
L4648	285138784	Redox solution in FIOLAX® ampoules: 3 x 20 ampoules, redox test solution 180, 430, 600 mV Pt/calomel, 220, 470, 640 mV Pt/Ag/AgCl
L4304	285138168	Redox solution in bottles: 250 ml in DURAN® glass bottle, redox test solution 430 mV Pt/calomel, 470 mV Pt/Ag/AgCl

Please note:

- Further technical details of the electrodes on request.
- The recommended connecting cables have a temperature resistancy of up to 130 °C, length 5 m with free end.
Further connecting cables are listed in the catalogue and on request.
- Details regarding accessories and calibration solutions, cleaning solutions and armatures are listed in the process electrode catalogue and on request.
- Technical alterations are subject to modification.

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