2.3.2 ProcessLine - Electrodes for most process applications

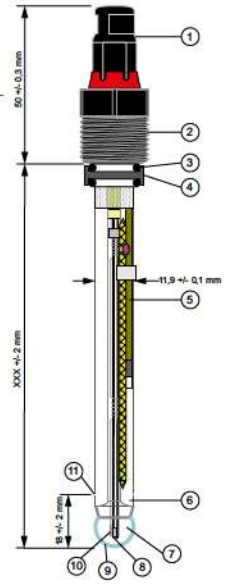
ProcessLine electrodes are low maintenance sensors for pH, ORP and temperature measurements for the toughest process applications, especially in the chemical industry. They are suitable for measurement in media with extreme ion strength, from boiler feed water to brine, as well as for strongly oxidizing as well as acidic and alkaline media.

Their special construction makes the ProcessLine electrodes very close to the performance of liquid electrolyte electrodes regarding their accuracy, stability, speed and longevity. Because the ProcessLine does not require refilling of electrolyte, they require much less maintenance and calibration. These sensors have a high potential for reducing ownership costs.

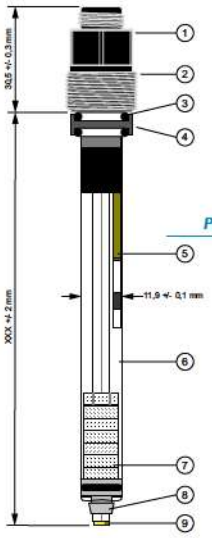
In addition to the multitude of measuring parameters, installation lengths, membrane glasses and connecting heads, you can also choose between **hole and PTFE annular junctions**. The electrodes of the PL8x series have two open connections in direct contact with the measuring medium, while the electrodes of the PL9x series are equipped with a PTFE junction. Both models minimize the risk for contamination/blocking of the junction, the main source of measuring errors, as well as the failure of the single rod measuring chain.

The **Duralid solid electrolyte with a high KCl content in the PL8x models** reduces measurement interference due to diffusion potentials at the transition of the two hole junctions from the reference electrode to the measuring medium. This not only prolongs sensor life and improves response time, but also allows for a more stable measured value; even under adverse conditions like changing flow/agitator speeds and media containing solvents.

PL 83 XXX NMSN



No.	Description PL 83 xxx NMSN
1	Screw plug head with Memosens® connection (Alternatively, analog electrodes with VP or coax plug head (for versions without integrated temperature sensor))
2	Screw-in thread Pg 13.5 (material PPS)
3	O-Ring 11-2.5 (material Viton®)
4	HD joint ring 18.8/12.7/6.5 (material stainless steel 1.4571)
5	Reference element (Silamid®)
6	Duralid-gelelectrolyte (KCl saturated) of the reference electrode
7	Inner buffer of the pH glass electrode
8	Temperature sensor (NTC 30 kOhm)
9	Glass membrane (H-glass)
10	Internal conduction element of the pH glass electrode
11	Hole junction



PL 99 XXX

No.	Description PL 99 xxx
1	Screw plug head with coax- plug head
2	Screw-in thread Pg 13.5 (material PPS)
3	O-Ring 11-2.5 (material Viton®)
4	HD joint ring 18.8/12.7/6.5 (Material stainless steel 1.4571)
5	Reference element (Silamid®) with silver ion trap
6	Rheolid®-electrolyte of the reference electrode
7	KCl storage tablets of the reference electrode
8	PTFE junction
9	Platinum blank

The reference system of the PL9X versions consists of:

- RheoLid electrolyte with KCl storage rings
- The toxification-resistant silamid conduction with silver ion trap
- Dirt-repellent PTFE annular junction

This equipment prevents toxification and blockage of the reference electrode. This ensures a long product life and a very reliable measuring behavior.

Along with the reference electrode, the measuring electrode also bears importance for the speed and accuracy of the measurement. The glass electrodes of the ProcessLine series have special membrane glasses that were optimized in cooperation with our customers to perfection for process use in the course of decades. These glasses boast a large temperature usage range and very few alkaline errors.

Electrodes

- Low maintenance, e.g. no refilling of electrolyte necessary.
- Hole junctions (PL8x) or PTFE annular junctions (PL9x), therefore no contamination or blockage of the reference electrode.
- Longevity as well as quick and stable measured values by means of Duralid (PL8x) or RheoLid(PL9x) reference electrolytes.
- Process-proven membrane glass with very low alkaline errors (H-glass) and optimized spherical shape.
- PTFE annular junction electrodes (PL9x) with silver ion barrier.
- For use in media with extreme ion strengths, strongly oxidizing features, high alkaline or acid content or solvents.
- Pressure and temperature range of up to 12 bar and 110°C (PL9x) or 135°C (PL8x).
- Installation lengths of 120, 225, 325, 360 and 425 mm with and without temperature sensors in analog and digital Memosens® models.
- For Memosens®:
  - Highest possible process safety by contact-free, inductive signal transmission
  - Low maintenance due to storage of sensor data in the sensor head

Benefits at a glance

ProcessLine electrodes

Type No.	Order number	Description	Parameter	pH range	Temperature range [°C]	Pressure range [bar]	Membrane glass or sensor	Membrane resistance [MΩ]	Zero-point [pH]	Junction	Electrolyte	Shaft material	Shaft diameter [mm]	Length [mm]	Temperature sensor	Connection head
PL 80-120pH	285113490	Low-maintenance pH combination electrode, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	120		S8
PL 80-225pH	285113720	Low-maintenance pH combination electrode, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	225		S8
PL 80-325pH	285113780	Low-maintenance pH combination electrode, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	325		S8
PL 80-360pH	285113790	Low-maintenance pH combination electrode, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	360		S8
PL 80-425pH	285113800	Low-maintenance pH combination electrode, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, screw plug head, length 425 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	425		S8
PL 81-120pHT VP	285113550	Low-maintenance pH combination electrode with Pt 1000, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	120	Pt1000	VP
PL 81-225pHT VP	285113560	Low-maintenance pH combination electrode with Pt 1000, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	225	Pt1000	VP
PL 81-325pHT VP	285113570	Low-maintenance pH combination electrode with Pt 1000, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	325	Pt1000	VP
PL 81-360pHT VP	285113580	Low-maintenance pH combination electrode with Pt 1000, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	360	Pt1000	VP
PL 81-425pHT VP	285113590	Low-maintenance pH combination electrode with Pt 1000, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 425 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	425	Pt1000	VP
PL 82-120pHT VP	285113650	Low-maintenance pH combination electrode with Pt 100, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	120	Pt100	VP
PL 82-225pHT VP	285113660	Low-maintenance pH combination electrode with Pt 100, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	225	Pt100	VP
PL 82-325pHT VP	285113670	Low-maintenance pH combination electrode with Pt 100, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	325	Pt100	VP
PL 82-360pHT VP	285113680	Low-maintenance pH combination electrode with Pt 100, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	360	Pt100	VP
PL 82-425pHT VP	285113690	Low-maintenance pH combination electrode with Pt 100, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, VP screw plug head, length 425 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	425	Pt100	VP
PL 83-120 NMSN	285113495	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	120	NTC30	Memosens®
PL 83-225 NMSN	285113505	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	225	NTC30	Memosens®
PL 83-325 NMSN	285113515	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	325	NTC30	Memosens®
PL 83-360 NMSN	285113525	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...130 °C	pH + T	0...14	0...130	1...12	H	300	7	2 hole	DuraLid	glass	12	360	NTC30	Memosens®

Electrodes