

2.4.1 FlowLine electrodes with fluid potassium chloride feed

pH and ORP single-rod measuring cells with KCl feed

In water and media with a very low conductivity in the low $\mu\text{S/cm}$ range or with suspended solids, and extreme pH values, we recommend the use of pH electrodes with a liquid KCl reference electrolyte.

This electrolyte is emitted to the measuring medium via the junction. This reduces interference potential that cause measuring errors and also improves response time by increasing the conductivity in near the fields of the electrode. This method helps to keep the junction from becoming plugged and increases sensor life.

The electrodes of this series work reliably and accurately, even in demanding media, whether it be in the chemical industry, the food industry, biotechnology, incinerators, the paper industry, power plants or plastic chemistry.

In order for you to find the right electrode for your application, FlowLine electrodes are available with and without integrated temperature sensors as well as the following selections:

• Three different process-proven membrane glasses:

- A-glass for media with low conductivity
- H-glass for a large range of process applications and especially those with high alkalinity
- S-glass with special resistance in highly alkaline applications and quick temperature changes

• Two different electrolyte solutions:

- L200 for low temperature applications
- L300 for general applications

• Three different diaphragms to select the electrolyte output that matches the respective application:

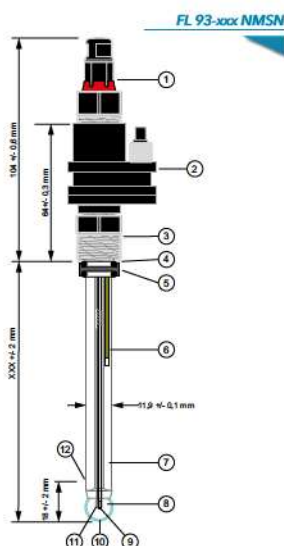
- Ceramic junction with an output of approx. 0.05 ml/h with a pressure application of 0.1 bar
- Platinum (MF) junction (MF = Multiflow) with an output of approx. 0.1 ml/h with a pressure application of 0.1 bar
- Ground joint (GJ) junction (GJ = Ground joint) with an output of approx. 2 ml/h with a pressure application of 0.1 bar

A perfect allround solution for basically any application is the platinum junction. Here, several platinum wires have been twisted and melted. The channels between the wires have constant dimensions. This ensures a pulsation-free output (compared to the ceramic junction) and therefore even more stable measured values and even better self-cleaning.



platinum junction

Electrodes with Memosens® plug head



No.	Description FL 93-xxx
1	Screw plug head with Memosens® connection (Alternatively analogue electrodes with VP or case plug head for versions without integrated temperature sensor)
2	Miniature pressure adapter (MDA, material PPSU, with screw M10x1 for tube connection (ID 4 mm, OD 6 mm) to the electrolyte reservoir)
3	Screw-in thread Pg 13.5 (material PPS)
4	O-Ring 11-2.5 (material Viton®)
5	HD joint ring 18.8/12.7/6.5 (Material stainless steel 1.4571)
6	Reference element (Silver/Silver chloride)
7	Liquid electrolyte of the reference electrode
8	Inner buffer of the pH glass electrode
9	Temperature sensor (NTC 30 kOhm)
10	glass membrane (depending on type of electrode A-, H- or S-glass)
11	Internal conduction element of the pH glass electrode
12	Junction (depending on the type of electrode ceramic, platinum or ground joint)

The Memosens® program of this electrode series includes pH and ORP electrodes. They are compatible with every meter on the market that is equipped with a Memosens® input.

What is the difference between Memosens® and other plug systems?

- Memosens® is a digital plug system.
- The sensor data is stored in the measuring head.
- The measuring signals are digitalized and transmitted inductively, i.e. contact-free.
- Absolutely waterproof and resistant against environmental influences.

Which advantages does Memosens® offer?

- Memosens® is an open system, i.e. it is supported by different manufacturers
- High process safety
- Preventive maintenance
- Perfect galvanized separation

➤ Refillable liquid electrolyte of the reference electrode.

➤ Highest possible measuring accuracy by reducing the junction interference potentials.

➤ Very quick response behavior.

➤ Matching electrode for every application by versatile selection of membrane glasses, liquid electrolyte, diaphragms as well as versions with and without temperature sensor and plug heads as analog and digital models.

➤ For Memosens®:

- Highest possible process safety due to contact-free, inductive signal transmission
- High comfort due to storage of sensor data in the sensor head

Benefits
at a glance

FlowLine electrodes

Type No.	Order number	Description	Parameter	pH range	Temperature range [°C]	Pressure range [bar]
FLA 90-120 GJ/DA pH	28510270	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, ground joint junction, electrolyte L 200, sphere membrane, A-glass, case screw plug head, length 120 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH	0.14	-30...100	6/3
FLA 90-120 MF pH	28510260	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, case screw plug head, length 120 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH	0.14	-30...100	6/3
FLA 90-120 pH	28510250	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, ceramic junction, electrolyte L 200, sphere membrane, A-glass, case screw plug head, length 120 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH	0.14	-30...100	6/3
FLA 90-280 MF pH	28510280	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, case screw plug head, length 280 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH	0.14	-30...100	6/3
FLA 90-380 MF pH	28510290	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, case screw plug head, length 380 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH	0.14	-30...100	6/3
FLA 91-120 MF VP pH	28510300	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 120 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 91-225 MF VP pH	28510310	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 225 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 91-280 MF VP pH	28510320	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 280 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 91-360 MF VP pH	28510330	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 360 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 91-380 MF VP pH	28510340	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 380 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 91-425 MF VP pH	28510350	Liquid electrolyte comb. electrode with Pt 1000 and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, VP screw plug head, length 425 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 93-120 MF NMSN	28511880	Liquid electrolyte comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 93-225 MF NMSN	28511885	Liquid electrolyte comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 93-280 MF NMSN	28511890	Liquid electrolyte comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 280 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLA 93-380 MF NMSN	28511895	Liquid electrolyte comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 380 mm, 12 mm Ø, -30...+100 °C, 0...14 pH	pH+T	0.14	-30...100	6/3
FLH 90-120 GJ/DA pH	28510280	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, ground joint junction, electrolyte L 300, sphere membrane, H-glass, case screw plug head, length 120 mm, 12 mm Ø, 0...+135 °C, 0...14 pH	pH	0.14	0...135	6/3
FLH 90-120 MF pH	28510370	Liquid electrolyte comb. electrode with integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 300, sphere membrane, H-glass, case screw plug head, length 120 mm, 12 mm Ø, 0...+135 °C, 0...14 pH	pH	0.14	0...135	6/3

Membrane glass or sensor	Membrane resistance [MΩ]	Zero-point [pH]	Junction	Electrolyte	Shaft material	Shaft diameter [mm]	Length [mm]	Temperature sensor	Connection head
A	200	7	ground joint	L200	glass	12	120		S8
A	200	7	platinum	L200	glass	12	120		S8
A	200	7	ceramic	L200	glass	12	120		S8
A	200	7	platinum	L200	glass	12	280		S8
A	200	7	platinum	L200	glass	12	380		S8
A	200	7	platinum	L200	glass	12	120	Pt1000	VP
A	200	7	platinum	L200	glass	12	225	Pt1000	VP
A	200	7	platinum	L200	glass	12	280	Pt1000	VP
A	200	7	platinum	L200	glass	12	360	Pt1000	VP
A	200	7	platinum	L200	glass	12	380	Pt1000	VP
A	200	7	platinum	L200	glass	12	425	Pt1000	VP
A	200	7	platinum	L200	glass	12	120	NTC30	Memosens®
A	200	7	platinum	L200	glass	12	225	NTC30	Memosens®
A	200	7	platinum	L200	glass	12	280	NTC30	Memosens®
A	200	7	platinum	L200	glass	12	380	NTC30	Memosens®
H	300	7	ground joint	L300	glass	12	120		S8
H	300	7	platinum	L300	glass	12	120		S8