

pH combination electrodes



Kuntze Instruments
Instrumentation for Water
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Description

These electrodes combine a pH half-cell and a reference electrode in one body.

The reference side of these combination electrodes have a ceramic junction of 2 mm diameter melted into the lower tip of the electrode. The electrode has a silver-silver chloride reference element and is filled with 3 mol KCL solution. The low maintenance type is filled with gel.

The membrane of the standard measuring electrode is ball shaped. This electrode can be used over the whole pH range from 0 – 14. Acid and alkali errors of this glassmembrane are very small. For example: 1 n NaOH at 20°C, the electrode yields a reading of 13.7-13.8 instead of 13.9 pH. For high temperature applications a version with different inner buffer is available. Fluoride concentrations of up to 50 ppm will not harm this probe. A different glass is available for HF concentrations for up to 500 ppm. pH measuring electrodes are filled with an inner buffer solution of 7 pH. Other inner buffer solutions upon request. The live span of these electrodes depend strongly on their working conditions. Typically it will be one-half to two years. Electrode aging still takes place, even if the electrode is stored. Combination pH sensors are usually equipped with a watertight connector to connect the cable to the analyzer/controller. Gel electrodes are also available with PG 13.5 thread.

Membrane-glass types

For the membrane two types of glass are used:

- AH** High-alkali/ high-temperature glass (standard)
Measuring range 0 - 14 pH
Temperature range up to 100 °C
Fluoride concentration up to 50 mg/l
- S** Corning glass (for higher fluoride concentrations)
Measuring range 1 - 11 pH
Temperature range up to 60 °C
Fluoride concentration up to 500 mg/l

Membrane shapes

The standard membrane is ball shaped.

For special applications, however, other shapes are available upon request, for instance dome membranes, cylindrical, flat or cone membranes.

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Diaphragms

The following versions are available:

- Ceramic junction 2 mm Ø (standard)
- Ceramic junction 1 mm Ø
- Ceramic junction 8 mm Ø (exchangeable)
- Platinum diaphragm 1 mm Ø
- Sleeve diaphragm (ground sleeve diaphragm, glass)

Temperatures

- Combination electrodes with gel electrolyte up to 70 °C
- Combination electrodes with liquid electrolyte up to 95 °C
- Combination electrodes with AH-glass body up to 100 °C
- Combination electrodes with Corning glass up to 60 °C
- Combination electrodes with PVC shaft up to 60 °C

Name Former	name	Description	Order-No.
AH-300-K-1-2	AH 300-1 KCl, AH 300-1 HT	Standard combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, ceramic junction 2 mm Ø	4132000
AH-300-K-2-2	AH 300-1 Gel	Standard combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4132100
S-300-K-1-2	S 300-1 KCl	Combination pH electrode, Corning glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, ceramic junction 2 mm Ø	4132300
S-300-K-2-2-PG	S 300-1 Gel PG	Combination pH electrode, Corning glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø, PG-13.5	4132410
AH-300-K-2-2-PG	AH 300-1 Gel PG	Combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø, PG-13.5	4132110
AH-300-K-3-2	AH 312-1 HT	Combination pH electrode with electrolyte junction, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl liquid electrolyte, glass, ceramic junction 2 mm Ø	4132510
AH-310-K-4-2	AH 312-1	Combination pH electrode with electrolyte junction, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel Gel-electrolyte, glass, ceramic junction 2 mm Ø	4132500

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Name Former	name	Description	Order-No.
AH-304-K-2-1	AH 304-1 Gel K	Standard combination pH electrode, AH glass, short version (80 mm below connector) IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4132600
S-300-K-2-2	S 300-1 Gel	Combination pH electrode, Corning glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4132400
AH-300-K-1-6	AH 300-1 SD	Combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, sleeve diaphragm	4132010
AH-300-S-1-2	AH 300-2 KCl	Combination pH electrode, AH glass, IP pH 7.0, dome membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, ceramic junction 2 mm Ø	4113013
AH-300-S-2-S	AH 300-2 Gel	Combination pH electrode, AH glass, IP pH 7.0, dome membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4113940
AH-300-K-1-3	AH 300-1 KCl/Pt	Combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, Pt diaphragm 1 mm Ø	4113015
AH-300-K-2-3	AH 300-1 Gel/Pt	Combination pH electrode, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, Pt diaphragm 1 mm Ø	4113143
S-300-K-1-4	S 301-1 KCl	Combination pH electrode, Corning glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, abradable diaphragm	4132310
S-300-K-1-5	S 301-1 SP KCl	Combination pH electrode, Corning glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, liquid electrolyte, glass, Diaphragm 15 mm jutting out, glass-encased	4132320
AH-304-K-2-1	AH 304-1 K	Combination pH electrode for laboratory use, AH glass, IP pH 7.0, spherical membrane, Ag/AgCl/3 m KCl, Gel-electrolyte, PVC, ceramic junction 2 mm Ø	4132600

Other designs available upon request

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AH-300-k-1-2



AH-300-k-2-2



S-300-K-2-2-PG



AH-304-K-2-1



AH-312-1



S-300-K-1-5



AH-300-K-3-2