

# Reference-Electrodes

for pH and ORP



**Kuntze Instruments**  
Instrumentation for Water  
and Waste Water Analysis  
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## Description

Reference electrodes are mainly used for pH, ORP, amperometric or ion selective measurements in conjunction with another measuring electrode. The standard version has 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. A variety of junctions is available like platinum or molded sleeve. The cable is connected via a water tight connector.

Reference electrodes filled with liquid KCL have a leakage of appx. 0.7 ml/24h.  
The electrical resistance is appx. 2 K-ohms.

Gel-electrodes are available with PG 13.5 fittings upon request.

Reference electrodes are also available with refillable double junctions. In some chemical processes KCL can contaminate the measured solution. The second junction can be filled with another electrolyte than KCL. Even contamination of the reference electrode with the test solution is minimized.

## 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

The temperature range for reference electrodes with gel electrolyte is up to 70 °C  
The temperature range for reference electrodes with liquid KCL electrolyte is up to 95 °C  
The temperature range for reference electrodes with PVC body is up to 50 °C



B-400-B-1-2



B-400-B-2-2



B-410-B-4-3-SB



B-400-B-2-2-PG



B-410-B-3-2

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Name	Former name	Description	Order No.
B-400-B-1-2	410 KCl	Standard reference electrode, Ag/AgCl/3 m KCl, liquid electrolyte, glass, ceramic junction 2 mm Ø	4133000
B-400-B-2-2	410 Gel	Standard reference electrode, Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4133100
B-410-B-4-2	412	Reference electrode with electrolyte junction, inner buffer Ag/AgCl/KCl-gel, Gel-electrolyte, glass, ceramic junction 2 mm Ø	4133310
B-410-B-4-3-SB	412 MS	Reference electrode with electrolyte junction, inner buffer Ag/AgCl/KCl-gel, outer buffer 3 m KCl, for med. applications, glass, Pt diaphragm 1 mm Ø	4114095
B-430-B-1-2	410 K	Reference electrode, Ag/AgCl/KCl-gel, Gel-electrolyte, PVC, ceramic junction 2 mm Ø	4114030
B-400-B-S-2	400	Kalomel reference electrode, Hg/HgCl/KCl sat., liquid electrolyte, glass, ceramic junction 2 mm	4114010

Other designs available upon request