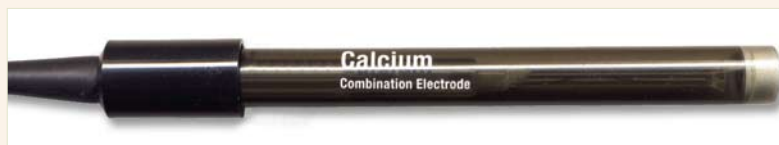


Ion selective electrodes

supplied with 1 m of cable and BNC plug

- Polymer membrane electrodes consist of various ion-exchange materials in an inert matrix such as PVC, polythene or silicone rubber. The potential developed at the membrane surface is related to the concentration of the species of interest.
- Solid state electrodes utilise relatively insoluble inorganic salts in a membrane. Solid state electrodes exist in homogeneous or heterogeneous forms. In both types, potentials are developed at the membrane surface due to the ion-exchange process.
- Glass membrane electrodes are formed by the doping of the silicon dioxide glass matrix with various chemicals. The most common of the glass membrane electrodes is the pH electrode. Glass membrane electrodes are also available for the measurement of sodium ions.
- Gas sensing electrodes are available for the measurement of ammonia, carbon dioxides and nitrogen oxides. These electrodes have a gas permeable membrane and an internal filling solution. The pH of the filling solution changes as the gas reacts with it which is detected by the built-in pH sensor.
- All models are combination electrodes and have an epoxy body.
- Dimensions: 110xØ12 mm.
- Each electrode comes with user instructions.
- **Two versions available:** standard (ISE20B...ISE52B) or with replaceable membrane (ISE60B...ISE82B).



Model	Ion	Sensor	Range (M)	Range (ppm)	°C	Interferences	pH	Electrolyte
ISE20B ISE60B	Ammonium NH ₄ ⁺	polymer	5.10 ⁻⁶ - 10 ⁰	0.1 - 18000	0 - 50	K ⁺	4 - 10	NaCl
ISE21B ISE61B	Bromide Br ⁻	solid state	5.10 ⁻⁶ - 10 ⁰	0.4 - 79900	0 - 50	I ⁻ , CN ⁻ , S ²⁻ , high levels of Cl ⁻ and NH ₃	2 - 14	KNO ₃
ISE22B ISE62B	Cadmium Cd ²⁺	solid state	10 ⁻⁷ - 10 ⁻¹	0.01 - 11200	0 - 50	Cu ²⁺ , Hg ²⁺ , Ag ⁺ , high levels of Fe ²⁺ and Pb ²⁺	2 - 12	KNO ₃
ISE23B ISE63B	Calcium Ca ²⁺	polymer	5.10 ⁻⁶ - 10 ⁰	0.2 - 40000	0 - 50	Pb ²⁺ , Hg ²⁺ , Cu ²⁺ , Ni ²⁺	3 - 10	KCl
ISE24B ISE64B	Chloride Cl ⁻	solid state	5.10 ⁻⁵ - 10 ⁰	1.8 - 35500	0 - 50	I ⁻ , Br ⁻ , CN ⁻ , S ²⁻	1 - 12	KNO ₃
ISE25B ISE65B	Copper Cu ²⁺	solid state	10 ⁻⁸ - 10 ⁻¹	0.00064 - 6350	0 - 50	Hg ²⁺ , Ag ⁺ , high levels of Cl ⁻ , Br ⁻ , Fe ²⁺ and Cd ²⁺	2 - 12	KNO ₃
ISE26B ISE66B	Cyanide CN ⁻	solid state	5.10 ⁻⁶ - 10 ⁻²	0.13 - 260	0 - 50	Cl ⁻ , Br ⁻ , I ⁻ , S ²⁻	11 - 13	KNO ₃
ISE27B ISE67B	Fluoride F ⁻	solid state	10 ⁻⁶ - sat.	0.02 - sat.	0 - 50	OH ⁻	5 - 8	KCl
ISE28B ISE68B	Fluoroborate BF ₄ ⁻	polymer	7.10 ⁻⁶ - 10 ⁰	0.1 - 10800	0 - 50	I ⁻ , ClO ₄ ⁻ , CN ⁻	2.5 - 11	(NH ₄) ₂ SO ₄
ISE29B ISE69B	Iodide I ⁻	solid state	5.10 ⁻⁸ - 10 ⁰	0.006 - 127000	0 - 50	S ²⁻ , CN ⁻ , Cl ⁻ , Br ⁻ , S ₂ O ₃ ²⁻ , NH ₃	0 - 14	KNO ₃
ISE30B ISE70B	Lead Pb ²⁺	solid state	10 ⁻⁶ - 10 ⁻¹	0.2 - 20700	0 - 50	Hg ²⁺ , Ag ⁺ , Cu ²⁺ , high levels of Fe ²⁺ and Cd ²⁺	3 - 8	KNO ₃
ISE31B ISE71B	Nitrate NO ₃ ⁻	polymer	7.10 ⁻⁶ - 10 ⁰	0.5 - 62000	0 - 50	I ⁻ , ClO ₄ ⁻ , CN ⁻ , BF ₄ ⁻	2.5 - 11	(NH ₄) ₂ SO ₄
ISE32B ISE72B	Perchlorate ClO ₄ ⁻	polymer	7.10 ⁻⁶ - 10 ⁰	0.7 - 99500	0 - 50	-	2.5 - 11	(NH ₄) ₂ SO ₄
ISE33B ISE73B	Potassium K ⁺	polymer	10 ⁻⁶ - 10 ⁰	0.04 - 39000	0 - 50	Cs ⁺ , NH ₄ ⁺	2 - 12	NaCl
ISE34B ISE74B	Silver/Sulphide Ag ⁺ /S ²⁻	solid state	10 ⁻⁷ - 10 ⁰	0.01 - 107900 0.003 - 32000	0 - 50	Hg ⁺ , Hg ²⁺	2 - 12	KNO ₃
ISE35B	Sodium Na ⁺	glass	10 ⁻⁶ - sat.	0.02 - sat.	0 - 50	H ⁺ , K ⁺ , Li ⁺ , Ag ⁺ , Cs ⁺ , Tl ⁺	5 - 12	NH ₄ Cl
ISE36B ISE76B	Surfactant X ⁻ /X	polymer	10 ⁻⁵ - 5.10 ⁻²	1 - 12000	0 - 50	similar types of surfactants	2 - 12	KCl
ISE37B ISE77B	Water hardness Ca ²⁺ /Mg ²⁺	polymer	10 ⁻⁵ - 10 ⁰	0.4 - 4000 (Ca ²⁺)	0 - 50	Cu ²⁺ , Zn ²⁺ , Ni ²⁺ , Fe ²⁺	5 - 10	KCl
ISE50B ISE80B	Ammonia NH ₃	gas sensing	5.10 ⁻⁷ - 10 ⁰	0.01 - 17000	0 - 50	volatile amines	11 - 13	NH ₄ Cl
ISE51B ISE81B	Carbon dioxide CO ₂ /CO ₃ ²⁻	gas sensing	10 ⁻⁴ - 10 ⁻²	4.4 - 440	0 - 50	volatile weak acids	4.8 - 5.2	NaHCO ₃
ISE52B ISE82B	Nitrogen oxides NO _x	gas sensing	5.10 ⁻⁶ - 5.10 ⁻³	0.2 - 220	0 - 50	SO ₂ , HF, acetic acid	1.1 - 1.7	NaNO ₂

Solutions

Ion - pH - mV - Redox - Conductivity

CODE	DESCRIPTION	
ISC20	Calibration solution, 1000 ppm ammonium	475 ml
ISC21	Calibration solution, 1000 ppm bromide	475 ml
ISC23	Calibration solution, 1000 ppm calcium	475 ml
ISC24	Calibration solution, 1000 ppm chloride	475 ml
ISC25	Calibration solution, 1000 ppm copper	475 ml
ISC27	Calibration solution, 1000 ppm fluoride	475 ml
ISC28	Calibration solution, 1000 ppm fluoroborate	475 ml
ISC29	Calibration solution, 1000 ppm iodide	475 ml
ISC31	Calibration solution, 1000 ppm nitrate	475 ml
ISC32	Calibration solution, 1000 ppm perchlorate	475 ml
ISC33	Calibration solution, 1000 ppm potassium	475 ml
ISC34	Calibration solution, 1000 ppm silver/sulphide	475 ml
ISC35	Calibration solution, 1000 ppm sodium	475 ml
ISC36	Calibration solution, 1000 ppm surfactant	475 ml
ISC37	Calibration solution, 1000 ppm water hardness	475 ml
ISC50	Calibration solution, 1000 ppm ammonia	475 ml
ISC51	Calibration solution, 1000 ppm carbon dioxides	475 ml
ISC52	Calibration solution, 1000 ppm nitrogen oxides	475 ml
ISA20	ISA solution for ammonium, potassium	475 ml
ISA21	ISA solution for bromide	475 ml
ISA22	ISA solution for cadmium	475 ml
ISA23	ISA solution for calcium	475 ml
ISA24	ISA solution for chloride	475 ml
ISA25	ISA solution for copper	475 ml
ISA27A	ISA solution for fluoride, TISAB-1	3800 ml
ISA27B	ISA solution for fluoride, TISAB-2	3800 ml
ISA28	ISA solution for fluoroborate	475 ml
ISA29	ISA solution for iodide	475 ml
ISA30	ISA solution for lead	475 ml
ISA31	ISA solution for nitrate	475 ml
ISA32	ISA solution for perchlorate	475 ml
ISA33	ISA solution for potassium	475 ml
ISA34	ISA solution for silver/sulphide	475 ml
ISA35	ISA solution for sodium	475 ml
ISA36	ISA solution for surfactant	475 ml
ISA37	ISA solution for water hardness	475 ml
ISA51	ISA solution for carbon dioxides	475 ml
ISA52	ISA solution for nitrogen oxides	475 ml

→ Other solutions should be prepared locally.

CODE	DESCRIPTION	
ISM50	Set of spare membranes for ISE50B	
ISM51	Set of spare membranes for ISE51B	
ISM52	Set of spare membranes for ISE52B	
ISM60	Replacement membrane kit for ISE60B	
ISM61	Replacement membrane kit for ISE61B	
ISM62	Replacement membrane kit for ISE62B	
ISM63	Replacement membrane kit for ISE63B	
ISM64	Replacement membrane kit for ISE64B	
ISM65	Replacement membrane kit for ISE65B	
ISM66	Replacement membrane kit for ISE665B	
ISM67	Replacement membrane kit for ISE67B	
ISM68	Replacement membrane kit for ISE68B	
ISM69	Replacement membrane kit for ISE69B	
ISM70	Replacement membrane kit for ISE70B	
ISM71	Replacement membrane kit for ISE71B	
ISM72	Replacement membrane kit for ISE72B	
ISM73	Replacement membrane kit for ISE73B	
ISM74	Replacement membrane kit for ISE74B	
ISM76	Replacement membrane kit for ISE76B	
ISM77	Replacement membrane kit for ISE77B	
ISM80	Replacement membrane kit for ISE80B	
ISM81	Replacement membrane kit for ISE81B	
ISM82	Replacement membrane kit for ISE82B	
ISF50	Membrane filling solution for ISE50B/ISE80B	125 ml
ISF51	Membrane filling solution for ISE51B/ISE81B	125 ml
ISF52	Membrane filling solution for ISE52B/ISE82B	125 ml



- All solutions are offered in sealed 500 ml bottles.
- pH buffers are colour coded to reduce errors. They are certified to 0.02 pH.
- Conductivity standards are certified to 0.5 %.
- Redox standards are certified to 1 mV at 25 °C.
- In addition to the reference, a test number is indicated revealing the charge number.
- Each solution is supplied with a certificate.
- The indicated values are at 25 °C. Where necessary, a value/temperature comparison chart is printed on the label.
- Expiry date is mentioned on each bottle.
- Always store solutions cool and away from sunlight.

CODE	DESCRIPTION	
B502	Coloured buffer 2.00 pH	500 ml
B504	Coloured buffer 4.00 pH	500 ml
B507	Coloured buffer 7.00 pH	500 ml
B510	Coloured buffer 10.01 pH	500 ml
B512	Coloured buffer 12.00 pH	500 ml
B560	Calibration solution 0.01 M KCl (1413 µS/cm)	500 ml
B561	Calibration solution 0.1 M KCl (12.88 mS/cm)	500 ml
B562	Calibration solution 1 M KCl (111.8 mS/cm)	500 ml
B566	Calibration solution 200 mS/cm (at 25 °C)	500 ml
B571	Redox standard solution 124 mV	500 ml
B572	Redox standard solution 358 mV	500 ml
B520	Electrolyte, 3M KCl	500 ml
B530	Electrode cleaning solution	500 ml

GOOD MEASUREMENT PRACTICES

- While calibrating or measuring all solutions should be stirred gently (e.g. with a magnetic stirrer) to ensure the electrode gives a true representation of the beaker contents.
- Calibration solutions should be chosen which have values near the expected sample value.
- Only fresh calibration solutions should be used! Changing all solutions daily is a good practice.
- All solutions should be maintained at equal temperature.
- Rinse the electrode twice between measurements: first thoroughly in distilled water and then with a small amount of the next sample to be measured.
- Allow the electrodes sufficient time to stabilise while calibrating or measuring. A stability indicator on all of our meters prompts the user when readings should be taken.