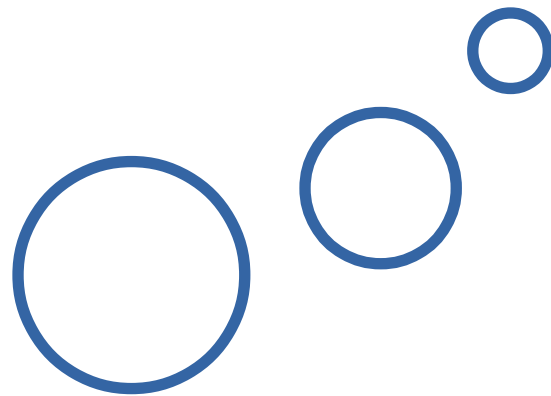




Technical Data Sheet

CITSens *Ion*



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CITSens Ion Potentiometer



C-CIT Sensor's 6 - Channel ISE-Potentiometer (ion meter) is used for studying the activity of a large amount of ions in liquids. The Potentiometer allows to connect 6 Ion Selective Electrodes (ISE) simultaneously to monitor six anions and/or cations in parallel. The ISE then are referenced to a single reference electrode (channel 7).

The instrument can be used for different applications:

- To check the comparability (i.e. reproducibility, detection limit etc.) of ISEs under identical conditions
- In process monitoring
- Monitoring of up to six different ions simultaneously.

The Potentiometer is connected with the PC and communicates by a RS232 interface. The measured potentials are stored in a txt-file on the PC which can be imported by different data processing software.

The high quality of the potentiometer was proved by the Swiss Federal Office of Metrology (METAS).

Specifications

Operating Voltage	9 V
Power Supply AC / DC	240 / 110V - 9V
Weight	1800 g
Size in cm (LxBxH)	22.5 x 13.5 x 8 (cm)
Operating time with Battery	5 days
Measuring range	-800mV - +800mV
Resolution	1µV
Uncertainty	±10µV

Product Number	Description	Pcs / Unit	Unit Price
3000-301	CITSens Ion Potentiometer	1	



CITSens *Ion* Electrodes



We offer Ion Selective Electrodes (ISE) and membranes of different size and shape for measuring the concentration of ions such as NH_4^+ , Mg^{2+} , Ca^{2+} , K^+ , Na^+ , and different metals in liquids. Typical applications include the quantification of key ions in chemical reactions, waste water analysis, aquaponics, phyto-mining and many other environmental applications.

The CITSens *Ion* Electrodes will be delivered without integrated reference electrodes and are available for different ions. The cable for each electrodes is optional and has to be ordered separately. Additional information on CITSens *Ion* accessories can be found in the [last chapter](#).

Sensortypes

Mini-Tube Electrode



The CITSens *Ion* ion selective Mini-Tube Electrodes are especially designed to measure in small sample volumes. All ion selective Mini-Tube Electrodes have high resolution, good selectivity against other Ions and a long shelf life. For additional information please check the [sensor specifications](#).

The Electrodes are designed for laboratory applications or mobile inserts and can be gamma-irradiated.

Size	L = 133 mm, d = 6 mm
Wire for connection	BNC /C6, open/C6
Electrolyte	Liquid electrolyte
Type of membrane	Polymer membrane
Available for following ions:	<ul style="list-style-type: none"> - Ammonium (NH₄⁺) - Calcium (Ca²⁺) - Potassium (K⁺) - Magnesium (Mg²⁺) - Sodium (Na⁺) - Nitrate (NO₃⁻)

Product Number	Description	Pcs / Unit	Unit Price
3000-301.1	CITSens Ion Ammonium (NH ₄ ⁺) selective Mini-tube electrode	1	
3000-301.2	CITSens Ion Calcium (Ca ²⁺) selective Mini-tube electrode	1	
3000-301.3	CITSens Ion Potassium (K ⁺) selective Mini-tube electrode	1	
3000-301.4	CITSens Ion Magnesium (Mg ²⁺) selective Mini-tube electrode	1	
3000-301.5	CITSens Ion Sodium (Na ⁺) selective Mini-tube electrode	1	
3000-301.6	CITSens Ion Nitrate (NO ₃ ⁻) selective Mini-tube electrode	1	
3000-300	CITSens Ion Mini Reference electrode	1	



Art. No.: 3000-301.1 CITsens Ion Ammonium (NH₄⁺) selective Mini-tube electrode

Selectivity coefficient	$\log K_{NH_4^+ H^+}^{Pot} = -3.8$ $\log K_{NH_4^+ K^+}^{Pot} = -0.8$ $\log K_{NH_4^+ Li^+}^{Pot} = -3.6$ $\log K_{NH_4^+ Mg^{2+}}^{Pot} = -5.5$ $\log K_{NH_4^+ Na^+}^{Pot} = -2.9$ $\log K_{NH_4^+ Ca^{2+}}^{Pot} = -4.8$
Slope	58.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-301.2 CITsens Ion Calcium (Ca²⁺) selective Mini-tube electrode

Selectivity coefficient	$\log K_{Ca^{2+} H^+}^{Pot} = -2.9$ $\log K_{Ca^{2+} Na^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} K^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} Mg^{2+}}^{Pot} = -4.7$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-301.3 CITsens Ion Potassium (K⁺) selective Mini-tube electrode

Selectivity coefficient	$\log K_{K^+ H^+}^{Pot} = -3.4$ $\log K_{K^+ Na^+}^{Pot} = -4.1$ $\log K_{K^+ Mg^{2+}}^{Pot} = -5.7$ $\log K_{K^+ Ca^{2+}}^{Pot} = -5.2$
Slope	57.5 mV / Decade
Resolution	k. A.
Detection limit	4 * 10 ⁻⁶ M
Drift	0.01 mV/h
Membrane type	Polymer membrane

Art. No.: 3000-301.4 CITsens Ion Magnesium (Mg²⁺) selective Mini-tube electrode

Selectivity coefficient	$\log K_{Mg^{2+} K^+}^{Pot} = -3.3$ $\log K_{Mg^{2+} Na^+}^{Pot} = -3.9$ $\log K_{Mg^{2+} Ca^{2+}}^{Pot} = -1.9$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane



Art. No.: 3000-301.5 CITSens Ion Sodium (Na⁺) selective Mini-tube electrode

Selectivity coefficient	$\log K_{Na^+ H^+}^{Pot} = -0.1$ $\log K_{Na^+ K^+}^{Pot} = -1.5$ $\log K_{Na^+ Mg^{2+}}^{Pot} = -3.2$ $\log K_{Na^+ Ca^{2+}}^{Pot} = -1.8$
Slope	55.2 mV / Decade
Resolution	k. A.
Detection limit	$2 \cdot 10^{-5}$ M
Drift	0.01 mV / h
Membrane type	Polymer membrane

Art. No.: 3000-301.6 CITSens Ion Nitrate (NO₃⁻) selective Mini-tube electrode

Selectivity coefficient	$\log K_{NO_3^- ClO_4^-}^{Pot} = 3.0$ $\log K_{NO_3^- Cl^-}^{Pot} = -2.1$ $\log K_{NO_3^- HCO_3^-}^{Pot} = -3.1$ $\log K_{NO_3^- SO_4^{2-}}^{Pot} = -3.2$ $\log K_{NO_3^- Acetat}^{Pot} = -3.2$
Slope	59.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-300 CITSens Ion Mini-Reference electrode

Mini-Reference Electrode for the use together with ion selective Mini-Tube Electrodes. The cable BCN/C6 or cable BCN/open has to be ordered separately.

Liquid electrolyte: 3M MgSO₄ or KCl
 Electrode: Ag / AgCl
 Size: l = 133 mm, d = 6 mm
 Lifetime: 12 month

Art. No.: "CITSens Ion" Gel-Reference Electrode

Gel-Reference electrode to use with the „CITSens Ion“ Flow-Trough-System from C-CIT AG

Gel electrolyte: KCl-Gel
 Electrode: Silver/Silver chloride
 Dimension: l = 45 mm, d = max. 20 mm
 Lifetime: > 12 Month



+41 43 477 85 55
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UniISE MT 050



The electrode body UniISE MT050 is the ideal electrode body for the development of own ion selective sensors. It is used to incorporate own ion selective membranes or ion selective [membranes of C-CIT Sensor AG](#). The electrode body consists of two parts a polymer tube with the silver/silver chloride electrode including the electrolyte and the connection a polymer tip with the ion selective membrane.

The ion selective membrane and the inner electrolyte can be replaced at any time. Therefore different membranes and different electrolytes without building up a totally new sensor can individually be set up. That's why the electrode body is the perfect tool for developing new ion selective electrodes.

Size	L = 133 mm, d = 6 mm
Wire for connection	BNC /C6, open/C6
Electrolyte	Liquid electrolyte
Type of membrane	Polymer membrane, exchangeable
Available for following ions:	<ul style="list-style-type: none"> - Ammonium (NH₄⁺) - Calcium (Ca²⁺) - Potassium (K⁺) - Magnesium (Mg²⁺) - Sodium (Na⁺) - Nitrate (NO₃⁻)

Product Number	Description	Pcs / Unit	Unit Price
3000-501.1	CITSens Ion electrode body UniISE MT050	1	
3000-502	CITSens Ion tool set for electrode body UniISE MT050	1	
3000-501.3	Ammonium (NH ₄ ⁺) selective replacement tip for UniISE MT050	1	
3000-501.4	Calcium (Ca ²⁺) selective replacement tip for UniISE MT050	1	
3000-501.5	Potassium (K ⁺) selective replacement tip for UniISE MT050	1	
3000-501.6	Magnesium (Mg ²⁺) selective replacement tip for UniISE MT050	1	
3000-501.7	Sodium (Na ⁺) selective replacement tip for UniISE MT050	1	
3000-501.8	Nitrate (NO ₃ ⁻) selective replacement tip for UniISE MT050	1	



Art. No.: 3000-501.3 Ammonium (NH₄⁺) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{NH_4^+ H^+}^{Pot} = -3.8$ $\log K_{NH_4^+ K^+}^{Pot} = -0.8$ $\log K_{NH_4^+ Li^+}^{Pot} = -3.6$ $\log K_{NH_4^+ Mg^{2+}}^{Pot} = -5.5$ $\log K_{NH_4^+ Na^+}^{Pot} = -2.9$ $\log K_{NH_4^+ Ca^{2+}}^{Pot} = -4.8$
Slope	58.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-501.4 Calcium (Ca²⁺) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{Ca^{2+} H^+}^{Pot} = -2.9$ $\log K_{Ca^{2+} Na^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} K^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} Mg^{2+}}^{Pot} = -4.7$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-501.5 Potassium (K⁺) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{K^+ H^+}^{Pot} = -3.4$ $\log K_{K^+ Na^+}^{Pot} = -4.1$ $\log K_{K^+ Mg^{2+}}^{Pot} = -5.7$ $\log K_{K^+ Ca^{2+}}^{Pot} = -5.2$
Slope	57.5 mV / Decade
Resolution	k. A.
Detection limit	4 * 10 ⁻⁶ M
Drift	0.01 mV/h
Membrane type	Polymer membrane

Art. No.: 3000-501.6 Magnesium (Mg²⁺) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{Mg^{2+} K^+}^{Pot} = -3.3$ $\log K_{Mg^{2+} Na^+}^{Pot} = -3.9$ $\log K_{Mg^{2+} Ca^{2+}}^{Pot} = -1.9$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane



Art. No.: 3000-501.7 Sodium (Na⁺) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{Na^+ H^+}^{Pot} = -0.1$ $\log K_{Na^+ K^+}^{Pot} = -1.5$ $\log K_{Na^+ Mg^{2+}}^{Pot} = -3.2$ $\log K_{Na^+ Ca^{2+}}^{Pot} = -1.8$
Slope	55.2 mV / Decade
Resolution	k. A.
Detection limit	$2 \cdot 10^{-5}$ M
Drift	0.01 mV / h
Membrane type	Polymer membrane

Art. No.: 3000-501.8 Nitrate (NO₃⁻) selective replacement tip for UniISE MT050

Selectivity coefficient	$\log K_{NO_3^- ClO_4^-}^{Pot} = 3.0$ $\log K_{NO_3^- Cl^-}^{Pot} = -2.1$ $\log K_{NO_3^- HCO_3^-}^{Pot} = -3.1$ $\log K_{NO_3^- SO_4^{2-}}^{Pot} = -3.2$ $\log K_{NO_3^- Acetat}^{Pot} = -3.2$
Slope	59.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

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CITSens Ion Membrane



The ion selective membranes can be built in the electrode body [UniISE MT050](#) or in the flow-trough system of C-CIT AG. The membranes together with the electrode body or the flow-trough system are ideal tools for the development of own selective electrodes. We also offer our full know-how by developing your own ion selective sensors and device.

The ion selective membranes of C-CIT Sensors AG are delivered in right size and thickness ready to use in the electrode body of the MT050. Any other sizes can be delivered on request.

If you are not able to find your membrane of choice please feel free to [contact us](#).

Polymer membrane	PVC Plasticizer Ionophore
Diameter	2 cm or customized
Lifetime	6 month, stored dry, dark and at room temperature

Product Number	Description	Pcs / Unit	Unit Price
3000-500.1	CITSens Ion Ammonium (NH ₄ ⁺) selective Membrane	1	
3000-500.2	CITSens Ion Calcium (Ca ²⁺) selective Membrane	1	
3000-500.3	CITSens Ion Potassium (K ⁺) selective Membrane	1	
3000-500.4	CITSens Ion Magnesium (Mg ²⁺) selective Membrane	1	
3000-500.5	CITSens Ion Sodium (Na ⁺) selective Membrane	1	
3000-500.6	CITSens Ion Nitrate (NO ₃ ⁻) selective Membrane	1	



Art. No.: 3000-500.1 Ammonium (NH₄⁺) selective Membrane

Selectivity coefficient	$\log K_{NH_4^- H^+}^{Pot} = -3.8$ $\log K_{NH_4^- K^+}^{Pot} = -0.8$ $\log K_{NH_4^- Li^+}^{Pot} = -3.6$ $\log K_{NH_4^- Mg^{2+}}^{Pot} = -5.5$ $\log K_{NH_4^- Na^+}^{Pot} = -2.9$ $\log K_{NH_4^- Ca^{2+}}^{Pot} = -4.8$
Slope	58.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-500.2 Calcium (Ca²⁺) selective Membrane

Selectivity coefficient	$\log K_{Ca^{2+} H^+}^{Pot} = -2.9$ $\log K_{Ca^{2+} Na^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} K^+}^{Pot} = -3.7$ $\log K_{Ca^{2+} Mg^{2+}}^{Pot} = -4.7$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

Art. No.: 3000-500.3 Potassium (K⁺) selective Membrane

Selectivity coefficient	$\log K_{K^+ H^+}^{Pot} = -3.4$ $\log K_{K^+ Na^+}^{Pot} = -4.1$ $\log K_{K^+ Mg^{2+}}^{Pot} = -5.7$ $\log K_{K^+ Ca^{2+}}^{Pot} = -5.2$
Slope	57.5 mV / Decade
Resolution	k. A.
Detection limit	4 * 10 ⁻⁶ M
Drift	0.01 mV/h
Membrane type	Polymer membrane

Art. No.: 3000-500.4 Magnesium (Mg²⁺) selective Membrane

Selectivity coefficient	$\log K_{Mg^{2+} K^+}^{Pot} = -3.3$ $\log K_{Mg^{2+} Na^+}^{Pot} = -3.9$ $\log K_{Mg^{2+} Ca^{2+}}^{Pot} = -1.9$
Slope	27.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

**Art. No.: 3000-500.5 Sodium (Na⁺) selective Membrane**

Selectivity coefficient	$\log K_{Na^+ H^+}^{Pot} = -0.1$ $\log K_{Na^+ K^+}^{Pot} = -1.5$ $\log K_{Na^+ Mg^{2+}}^{Pot} = -3.2$ $\log K_{Na^+ Ca^{2+}}^{Pot} = -1.8$
Slope	55.2 mV / Decade
Resolution	k. A.
Detection limit	$2 \cdot 10^{-5}$ M
Drift	0.01 mV / h
Membrane type	Polymer membrane

Art. No.: 3000-500.6 Nitrate (NO₃⁻) selective Membrane

Selectivity coefficient	$\log K_{NO_3^- ClO_4^-}^{Pot} = 3.0$ $\log K_{NO_3^- Cl^-}^{Pot} = -2.1$ $\log K_{NO_3^- HCO_3^-}^{Pot} = -3.1$ $\log K_{NO_3^- SO_4^{2-}}^{Pot} = -3.2$ $\log K_{NO_3^- Acetat}^{Pot} = -3.2$
Slope	59.0 mV / Decade
Resolution	k. A.
Detection limit	k. A.
Drift	k. A.
Membrane type	Polymer membrane

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CITSens Ion Accessories



Cable BNC / S7



Toolset

The tool set for the electrode body consists of a screwer and a punch with the right diameter to stamp membranes in the right size suitable to our UniISE MT050.

To connect the electrodes to the potentiometer (ion meter) of C-CIT Sensors AG we offer four different wires for being able to provide you the best choice for your application. If you have your own potentiometer we also offer wires with the right connector for the electrode body and an open end where a connector of choice can be installed.

Product Number	Description	Pcs / Unit	Unit Price
3000-251	Cable BNC / S7 Plug	1	
3000-252	Cable Open / S7 Plug	1	
3000-253	Cable BNC / C6 Plug	1	
3000-254	Cable Opem / C6 Plug	1	
3000-502	Toolset for Electrode Body UniISE MT050	1	

+41 43 477 85 55
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