

# Modular ION\_Mini 4.6

## TECHNICAL SPECIFICATIONS

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## Electrodes specifications

MODULAR ELECTRODE / Mini ION 4.6 / Modular RE

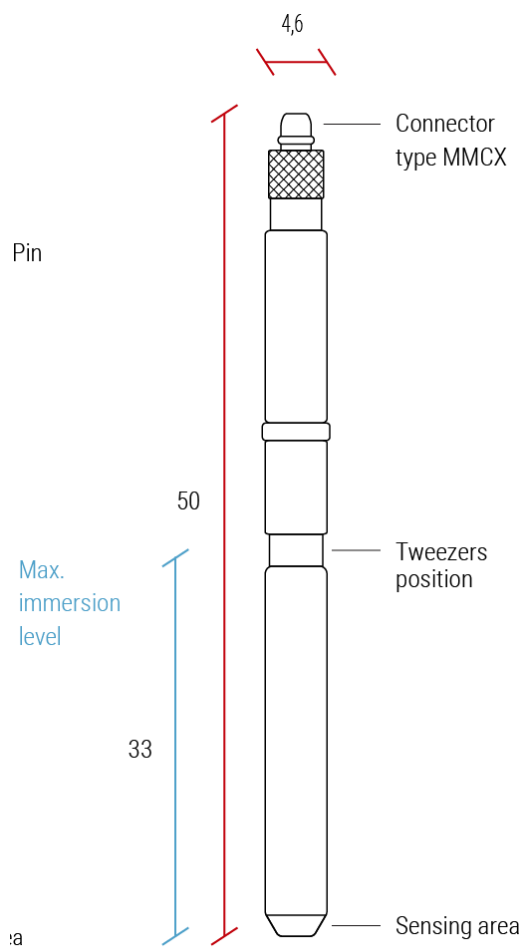
Body material: PVC

Diameter 4,6mm

Length 50mm

Spare part of electrode's head:

- Multi iON Probe, ref B25YX
- Single ION Probe, ref SXYZ



### Electrode characteristics

ELECTRODE	Slope mV/ decade	Linear Range	Response time	pH range	Accuracy *	Repeatability **	Main interferences  Selectivity coefficient
AMMONIUM	54±5 mV	5x10 <sup>-6</sup> ...0,5 M 0.09...9.000 mg/l	< 60"	4...8.5	±4%	±10%	$K(NH_4^+, K^+) = 10^{-1.0}$ , $K(NH_4^+ + Ca^{2+}) = 10^{-4.0}$  $K(NH_4^+ + Na^+) = 10^{-2.9}$ , $K(NH_4^+, Mg^{2+}) = 10^{-3.2}$
BROMIDE	-54±5 mV	0.4...8.000 mg/l	< 60"	1...12	±4%	±10%	Trace of Ag, S o Hg. To avoid I- and CN <sup>-</sup>  At less degree OH <sup>-</sup> (10 <sup>-4.5</sup> ) and Cl <sup>-</sup> (10 <sup>-2.7</sup> )
CALCIUM	24±5 mV	1x10 <sup>-5</sup> ...0,1 M 0.4...4.000 mg/l	< 60"	3.5...8	±8%	±20%	$KCa^{2+} H^+ = 10^{-2.9}$ / $KCa^{2+} Na^+ = 10^{-3.7}$  $KCa^{2+} K^+ = 10^{-3.6}$ / $KCa^{2+} NH_4^+ = 10^{-3.0}$
CHLORIDE	-54±5 mV	0.5 mg/l 1,3...35.000 mg/l	< 60"	2...12	±4%	±10%	Iodide ions irreversibly damage the membrane. Will not give reliable readings if more than a trace of Ag or S ions are present in the solution.
COPPER	+25±5 mV	0.06...3.000 mg/l	<30">10ppm <5' <10ppm	2...7	±8%	±20%	Unreliable results in presence of Ag, S or H. Br and Cl ions will interfere if their concentration is comparable to copper ions

FLUORIDE	-54±5 mV	1x10 <sup>-6</sup> – 1 M 0.02 – 19.000 mg/l	< 60"	4...8	±4%	±10%	Only hydroxide ion (OH <sup>-</sup> ) affects to the fluoride measurement. To eliminate this interference, pH must be kept below 8.  Due to the high complexation of F ions in real samples, a special TISAB must be used-
IODIDE	-54±5 mV	0.1...10.000 mg/l	< 60"	2...12	±4%	±10%	Trace of Ag, S o Hg. To avoid CN <sup>-</sup>  In less significance Br 10 <sup>-3,4</sup> y Cl <sup>-</sup> 10 <sup>-6</sup>
LITHIUM	54±5 mV	1.4x10 <sup>-5</sup> ...0,7 M 0.1...5.000 mg/l	< 60"	2...12	±4%	±10%	K (Li <sup>+</sup> , Na <sup>+</sup> )=10 <sup>-2,3</sup> / K(Li <sup>+</sup> , K <sup>+</sup> )=10 <sup>-2,4</sup> K (Li <sup>+</sup> , H <sup>+</sup> )= 10 <sup>-3,0</sup>
MAGNESIUM	24±5 mV	1x10 <sup>-4</sup> ...0,1 M 2.4...2.400 mg/l	< 120"	3...8.5	±8%	±20%	K (Mg <sup>2+</sup> , K <sup>+</sup> )=10 <sup>-3,6</sup> ; K (Mg <sup>2+</sup> , Ca <sup>2+</sup> )= 10 <sup>-1,0</sup>
NITRATE	-54±5 mV	1x10 <sup>-5</sup> ...0,5 M 0.6...31.000 mg/l	< 60"	2...11	±4%	±10%	K(NO <sub>3</sub> <sup>-</sup> , Br <sup>-</sup> )= 10 <sup>-1,5</sup> , K (NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> )= 10 <sup>-1,7</sup>  K (NO <sub>3</sub> <sup>-</sup> , OH <sup>-</sup> )= 10 <sup>-1,8</sup> , K( NO <sub>3</sub> <sup>-</sup> , CH <sub>3</sub> COO <sup>-</sup> )= 10 <sup>-2,2</sup>
NITRITE	-53.6 ±5 mV	0.5...1.000 mg/l	< 120"	4...8	±4%	±10%	K(NO <sub>2</sub> <sup>-</sup> , SCN <sup>-</sup> )= 10 <sup>-0,2</sup> , K(NO <sub>2</sub> <sup>-</sup> , ClO <sub>4</sub> <sup>-</sup> )= 10 <sup>-2,4</sup>  K(NO <sub>2</sub> <sup>-</sup> , I <sup>-</sup> )= 10 <sup>-2,2</sup> , K(NO <sub>2</sub> <sup>-</sup> , Br <sup>-</sup> )= 10 <sup>-3,3</sup>

PERCHLORATE	-54±5 mV	0.1...10.000 mg/l	< 60"	1...11	±4%	±10%	$K(ClO_4^-, SCN^-) = 10^{-1.7}$ , $K(ClO_4^-, I^-) = 10^{-1.7}$ $K(ClO_4^-, NO_3^-) = 10^{-1.7}$
POTASSIUM	54±5 mV	0.3...39000 mg/l	< 60"	1...9	±4%	±10%	$K(K^+, NH_4^+) = 10^{-2.1}$ ; $K(K^+, Li^+) = 10^{-4.3}$ $K(K^+, Na^+) = 10^{-4.6}$ $K(K^+, Ca^{2+}) = 10^{-3.9}$
SODIUM	54±5 mV	2.3...23.000 mg/l	< 60"	1...9	±4%	±10%	$K(Na^+, Li^+) = 10^{-3.2}$ , $K(Na^+, K^+) = 10^{-2.5}$ $K(Na^+, Ca^{2+}) = 10^{-4.0}$
SILVER	54±7 mV	0.1...10.000 mg/l	< 60"	1...9	±4%	±10%	Can not work on presence of $S^{2-}$ o $Hg^{2+}$

## Order code

ION	Parameter	Order code
Ca2+)	Calcium	MD040
(Cl-)	Chloride	MD035
(Cu2+)	Copper	MD063
(F-)	Fluoride	MD019
(K+)	Potassium	MD039
(Li+)	Lithium	MD007
(Mg2+)	Magnesium	MD024
(Na+)	Sodium	MD023
(NH4+)	Ammonium	MD018
(NO2-)	Nitrite	MD046
(NO3-)	Nitrate	MD062
pH	Hydrogen	MD001
REF	Reference	MRX11
(ClO4-)	Perchlorate	MD099
(Ag+)	Silver	M107
(Br-)	Bromide	M080
(I-)	Iodide	M127