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# Na 800

SODIUM ION-SELECTIVE ELECTRODE WITH S7 PLUG-IN CONNECTOR

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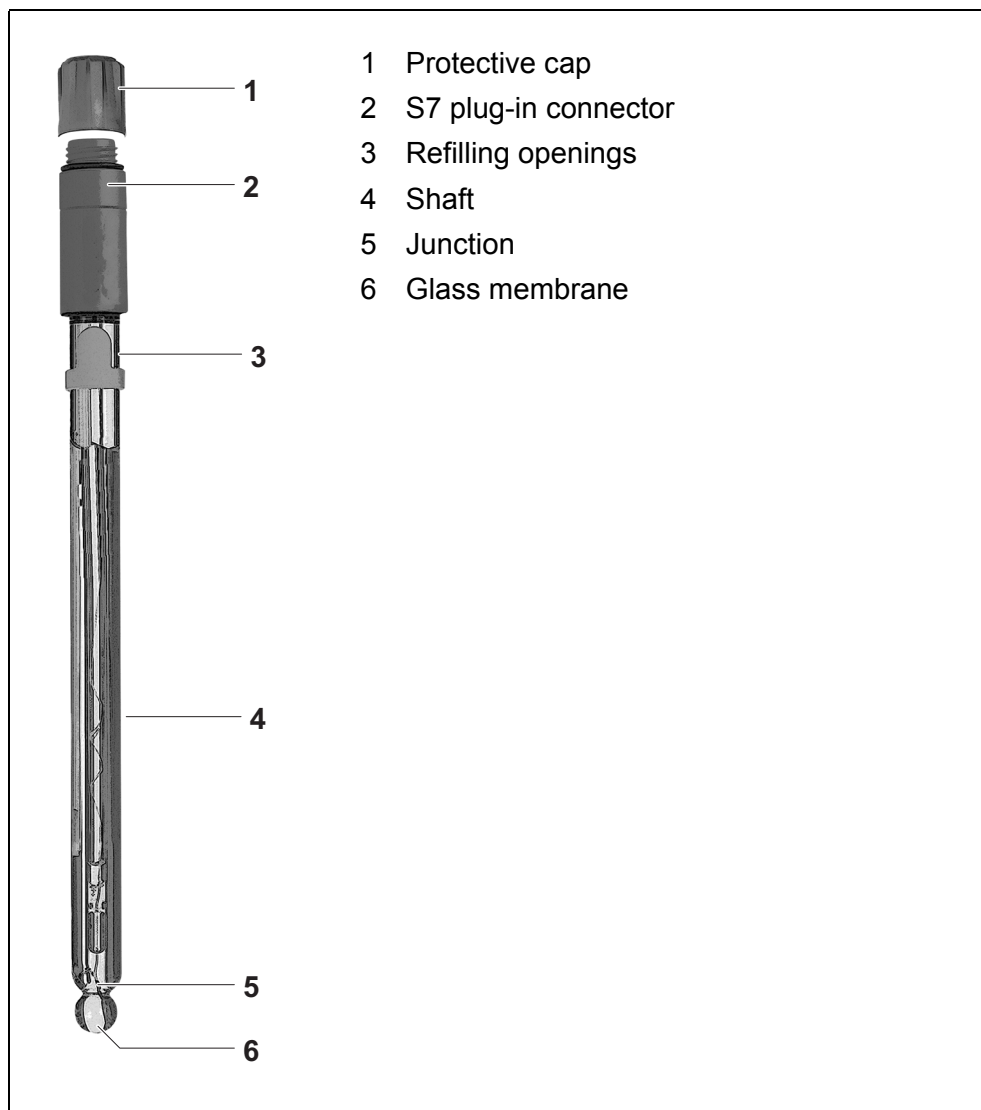


a xylem brand

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## Overview

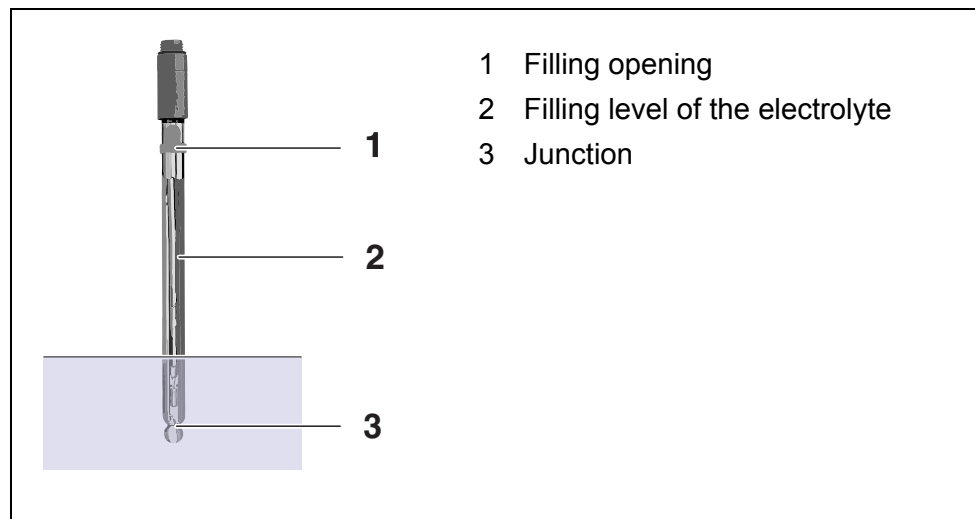


## Commissioning

- 1 Pull off the watering cap.  
It contains storing solution (sodium chloride solution 0.1 mol/l).
- 2 Electrodes that were stored dry have to be watered in storing solution for 24 hours.  
Refill any missing 3 M potassium chloride solution in the electrolyte compartment of the reference system.  
The filling level of the electrolyte solution should always be at least 5 cm above the level of the test sample.
- 3 Rinse the electrode with deionized water.
- 4 Wipe the shaft using a clean paper towel.  
The electrode is ready to measure.

## Conditioning, calibration, measurement

### General information



When operating the electrode ensure that

- the filling opening (1) for the electrolyte is open
- no air bubbles are in the electrolyte
- the depth of immersion is within the optimum range:

Minimum depth of immersion

The junction (3) must be covered

Maximum depth of immersion

Approx. 1 cm below the fluid level (2) of the electrolyte

### Before measuring

- 1 Condition the electrode in standard solution prior to using. To achieve a good responding behavior, the concentration of the standard solution should be similar to the concentration expected of the test sample.
- 2 For calibrating and measuring, the plug of the refilling opening of the electrode has to be open. The membrane and junction have to be immersed in the test sample.
- 3 Remove any air bubbles in the electrolyte by slightly knocking against the shaft.
- 4 Connect the electrode to the meter (see operating manual of your meter).
- 5 Calibrate (see operating manual of your meter).



The conditioning time depends on the previous history of the ion sensitive electrode. Connect the electrode to the meter and switch to the measured value display (see operating manual of the meter). The electrode is sufficiently conditioned when the measured value no longer changes considerably under otherwise constant conditions (temperature, composition of the solution).

## Sample preparation

The test sample should be slightly alkaline but at least have a pH value of 6. For an optimum measurement result we recommend that you use the ISA/Na sample conditioning solution.



If you would like to have more detailed information concerning sample preparation and measuring procedures, WTW provides a large number of application reports for various applications.

## Response times

The Na electrode adjusts rather slowly. A waiting time of 10 to 40 minutes is required for a stable measured value. The waiting time is shorter if you rinse with the new sample prior to measuring or add an alkaline buffer solution.

- When changing from low to high concentrations
  - With concentration  $< 10^{-4}$  mol/L: approx. 30 seconds,
  - With concentration  $> 10^{-4}$  mol/L:  $< 30$  seconds;
- When changing from high to low concentrations
  - several minutes.

## Interferences

Interfering ions in the test sample falsify the measurement result. The ratio of the interfering ion to the measured ion (sodium) may not be greater than the quoted value (X/Na<sup>+</sup>):

X	Ag <sup>+</sup>	H <sup>+</sup>	Li <sup>+</sup>	K <sup>+</sup>	NH <sub>4</sub> <sup>+</sup>	Mg <sup>2+</sup>
X/Na <sup>+</sup>	0	<0.001	<1	<5	<50	<2000

## Aging

Please note that every electrode undergoes a natural aging process. The response time increases and the slope decreases with the age of the (combination) electrode. The following factors shorten the lifetime considerably:

- Incorrect storage
- Special measuring conditions (e.g. organic solutions, frequent measurement with high concentrations of interfering ions)
- High temperatures
- High changes in temperature

The warranty does not cover damage caused by measuring conditions and mechanical damage.

## Cleaning and maintenance

Cleaning	Contamination	Cleaning procedure
	Water-soluble contamination	Submerge in deionized water for 10 minutes
	Metal hydroxides	Submerge in 10% citric acid for 10 minutes

After cleaning:

- Thoroughly rinse the electrode with deionized water.
- Condition in saturated sodium solution for several hours
- Recalibrate as necessary.

**Maintenance** Refill used-up electrolyte.

## Storage

**Storing temperature**

0 ... 40°C

**Between two measurements**

Condition the electrode in standard solution.

**Overnight**

Rinse the electrode with deionized water and dry it. Then put on the storage vessel and store the electrode upright.

**Longer than overnight**

Remove the electrolyte, then rinse the electrode with deionized water and dab it dry with a clean paper towel. Store the electrode in the storage vessel in a dry place. For the following measurement, prepare the electrode as described in section COMMISSIONING.



Depending on the storage conditions (temperature and air moisture), the watering liquid in the cap may dry up. In this case the Na electrode has to be watered in 0.1 mol/l sodium chloride solution for at least 24 hours before it is ready to measure.

Crystals in the electrolyte area can be dissolved by warming in water. Subsequently, the electrolyte solution should be replaced.

## Recommended accessories

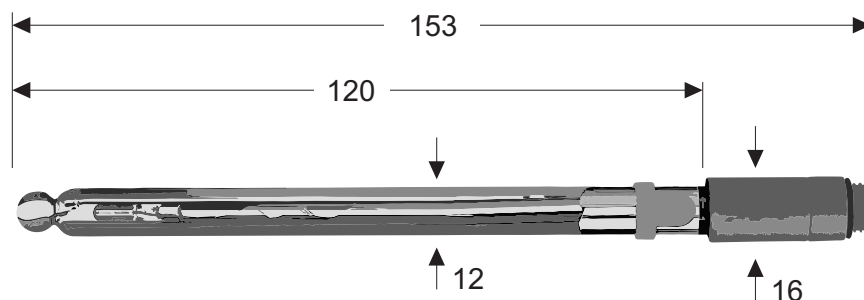
Description	Model	Order no.
Total ionic strength buffer solution, pH 11, 1 bottle with 1 l	ISA/Na	150125
Standard solution: 10g/l sodium 1 bottle with 1 l	ES/Na	120222
Connection cable with DIN plug. For pH/ORP electrodes with plug head connector, 1 m cable.	AS/DIN	108110
Connection cable with BNC plug. For pH/ORP electrodes with plug head connector, 1 m cable.	AS/BNC	108114

## What to do if ...

<b>Measured value unstable</b>	<b>Cause</b>	<b>Remedy</b>
	– Not enough electrolyte in the electrode	– Refill electrolyte
	– Junction crusted	– Rinse crusts with deionized water
	– Cable broken	– Exchange the cable
<b>Slope too low</b>	<b>Cause</b>	<b>Remedy</b>
	– Conditioning time too short	– Extend the conditioning time
	– Standard solutions too old	– Use new standard solutions
	– Electrode defective	– Exchange the electrode

## Technical data

Dimensions  
(in mm)



Length	120 mm
Diameter	
Shaft	12 mm
Plug head connector	16 mm

Materials

Shaft	Glass
Plug head connector	PPS
Membrane	Glass
Materials contacting the test sample	Glass
Junction	Platinum
Sensor	Na-sensitive glass, sphere
Reference system	Silamid®

Measurement  
conditions

Measuring ranges at 20 °C	10 <sup>-6</sup> ... 1 mol/l Na <sup>+</sup> 0.01...23000 mg/l NH <sub>4</sub> <sup>+</sup>
Temperature range	-10 ... +80 °C
pH range	8 ... 11 (see INTERFERENCES)
Depth of immersion	min. 20 mm max. 100 mm
Operating position	Vertical, tilted max. 45 °
Max. allowed overpressure	< 5·10 <sup>4</sup> Pa (0.5 bar)

Characteristic data  
on delivery

Reproducibility	without interferences: ± 2 % < ±1 mV (< ±4% of the measured Na <sup>+</sup> concentration)
Membrane resistance	< 500 MΩ





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