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**Calibration Specification for Seawater Nutrients Analyzers  
(English Translation)**

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## Introduction

This specification is based on JJF 1001-2011 "General Metrology Terms and Definitions", JJF 1059.1-2012 "Inaccurate Measurement "Quality Evaluation and Representation" and JJF 1071-2010 "Rules for the Compilation of National Metrology and Calibration Specifications" are the basic series of specifications Make it.

This specification combines the development and application status of seawater nutrient salt measuring instruments, and refers to HY/T 099-2007 seawater Part of the content of the detection method of the nutrient salt meter is formulated.

This specification is released for the first time.

Calibration specification for seawater nutrient salt meter

### 1 Scope

This specification is applicable to the calibration of nutrient salt meters used in marine field.

2 Reference documents this specification refers to the following documents.

HY/T 099-2007 seawater nutrient salt measuring instrument testing method for dated reference documents, only the dated version applies to this specification; for undated references the latest version (including all amendments) is applicable to this specification.

### 3 overview

The nutrients referred to in this specification are nitrate, nitrite, ammonia-nitrogen, phosphate and silicate in seawater.

Inorganic salts needed for the growth of foreign plants.

Seawater nutrient salt measuring instrument (hereinafter referred to as "measuring instrument") is used to measure the nutrient salt concentration in seawater on-site, which can Automatic or semi-automatic injection, quantitative addition of reagents, chemical reactions and measurement. The measuring instrument mostly adopts the colorimetric method.

Measure the degree of absorption of light waves by sea water samples, and analyze the nutrient concentration of sea water samples.

### 4 Measurement characteristics

#### 4.1 Detection limit

Nitrate-nitrogen should not exceed 4 $\mu$ g/L; nitrite-nitrogen and phosphate-phosphorus should not exceed 1 $\mu$ g/L; ammonia-nitrogen should not exceed More than 3 $\mu$ g/L; silicate-silicon should not exceed 6 $\mu$ g/L.

4.2 Indication error Relative error of indication. nitrate-nitrogen, nitrite-nitrogen,

phosphate-phosphorus, silicate-silicon should not exceed the measured value  $\pm 10\%$  of the measured value; ammonia-nitrogen should not exceed  $\pm 15\%$  of the measured value.

When the indication value of the measuring instrument is within 10% of its measuring range, the indication error of nitrate-nitrogen and ammonia-nitrogen should not exceed  $5\mu\text{g/L}$ ; nitrite-nitrogen, phosphate-phosphorus, silicate-silicon should not exceed  $\pm 3\mu\text{g/L}$ .

4.3 Measurement repeatability Nitrate-nitrogen, nitrite-nitrogen, phosphate-phosphorus, silicate-silicon and ammonia-nitrogen measurement repeatability should not be greater than 3%.

**Note:** All the above indicators are not used as eligibility judgments, only for reference.

## 5 Calibration conditions

5.1 Calibration environment conditions Ambient temperature.  $(20\pm 5)^{\circ}\text{C}$ ;

Relative humidity. 20%~80%;

Others. There is no mechanical vibration or electromagnetic interference that affects the normal operation of the measuring instrument.