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ENVIRONMENTAL PROTECTION INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ/T 96-2003

The technical requirement for water quality automatic analyzer of pH

pH 水质自动分析仪技术要求

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The technical requirement for water quality automatic analyzer of pH

1 Scope

This technical requirement specifies technical performance requirements and performance test methods for water quality automatic analyzer of pH of surface water, industrial sewage and municipal sewage. It is applicable to the development, production and performance inspection of such instruments.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 6920-86, *Water quality - Determination of pH value - Glass electrode method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 specimen

surface water, industrial sewage and municipal sewage guided into the automatic analyzer

3.2 pH standard solution

pH standard solution that is prepared with reference reagent

3.2.1 hydrogen phthalate pH standard solution

standard solution of pH=4.008 (25°C) that is prepared with hydrogen phthalate

3.2.2 neutral phosphate pH standard solution

6.2 The system has the functions of setting, proofreading, power failure protection, call recovery, fault alarm, as well as time and parameter display, including year, month, day, hour, minute, and measured value.

7 Instrument structure

7.1 General structure

Must meet the following requirements.

7.1.1 Structure is reasonable. Product assembly is solid. Parts are tightened, without looseness.

7.1.2 Under normal operating conditions, it can work smoothly without safety hazards.

7.1.3 Each component is not easy to cause mechanical and circuit failures. There is no safety hazard in construction.

7.1.4 With the performance that does not affect the operation of the automatic analyzer due to water soaking, condensation and so on.

7.1.5 Convenient for maintenance and inspection, without safety hazard.

7.1.6 Display has no stains or damage. The character strokes in the display part have uniform and clear brightness. No dark corners, dark spots, rainbows, bubbles, dark display, hidden scratches, no display, flickering.

7.1.7 Words, symbols, and signs describing functions shall comply with the requirements of "9 Marks" in this Standard.

7.2 Structure

The automatic analyzer of pH is composed of detection unit, signal converter, display record, data processing, signal transmission unit.

7.3 Sampling part

8.1.1 Ambient temperature: at any temperature between 10~40°C, the temperature change during the test is within $\pm 5^{\circ}\text{C/d}$.

8.1.2 Relative humidity: within $(65\pm 20)\%$.

8.1.3 Voltage: specified voltage (220 ± 20) V.

8.1.4 Power frequency: specified frequency (50 ± 0.5) Hz.

8.1.5 Flow rate: flow rate specified by the manufacturer.

8.1.6 pH standard solution temperature: $(25\pm 1)^{\circ}\text{C}$.

8.2 Test preparation and calibration

8.2.1 Test preparation: for water on the glass electrode that has been in a dry state for a long time, the electrode shall be immersed in water overnight in advance to connect with signal converter. Turn on the power. The automatic analyzer shall be warmed up for more than 30min before the start of the test, to stabilize the functions of each part and the display and recording unit. When the electrode is contaminated, if necessary, use detergent, 0.01mol/L hydrochloric acid to wash. Then use running water to thoroughly wash.

8.2.2 Calibration: the calibration procedures are as follows:

8.2.2.1 Immerse the electrode in the standard solution of pH= 9.180. Adjust the indicated value to the pH standard solution value.

8.2.2.2 Immerse the electrode in the standard solution of pH=6.865. Adjust the indicated value to the pH standard solution value.

8.2.2.3 Immerse the electrode in the standard solution of pH=4.008. Adjust the indicated value to the pH standard solution value.

8.2.2.4 Adjustment: alternately perform 8.2.2.1, 8.2.2.2 and 8.2.2.3 operations; adjust the analyzer until the difference between the displayed value and the measured value of the standard solution is within $\pm 0.1\text{pH}$.

Remark: In the alternate test, use distilled water to fully wash and absorb the water on the glass electrode. During the measurement process, the pH standard solution must be fully stirred to make it flow evenly. Same as below.

8.3 Performance test methods

8.3.1 Repeatability: under the test conditions of 7.1, immerse the electrode in the standard solution of pH=4.008; conduct continuous measurement 6 times. Calculate the difference between each measured value and the average. The maximum difference shall be repeatability.

country (DC 500V insulation impedance meter) to measure the insulation resistance between the power phase and the chassis (grounding terminal).

9 Marks

On the instrument, the following related matters must be stated in a conspicuous place, in accordance with related national regulations.

9.1 Name and model.

9.2 Measurement object.

9.3 Measuring range.

9.4 Operating temperature range.

9.5 Power source category and capacity.

9.6 Name of manufacturer.

9.7 Production date and production batch number.

9.8 Signal output type (when necessary).

10 Operation manual

In the operation manual, at least the following related matters must be explained.

10.1 Choice of installation site.

10.2 Specimen flow.

10.3 Piping and wiring.

10.4 Preheat time.

10.5 Instructions for use.

10.5.1 Determination preparation and calibration method.

10.5.2 Preparation method of calibration fluid.

10.5.3 Operation method for determination.

10.5.4 Disposal when determination is stopped.

10.6 Maintenance inspection.

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